



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

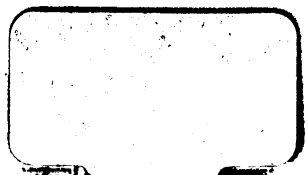
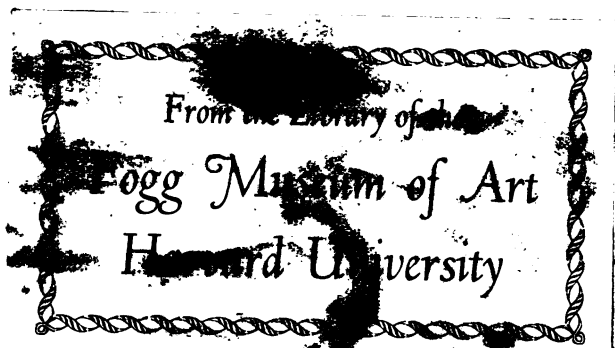
Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

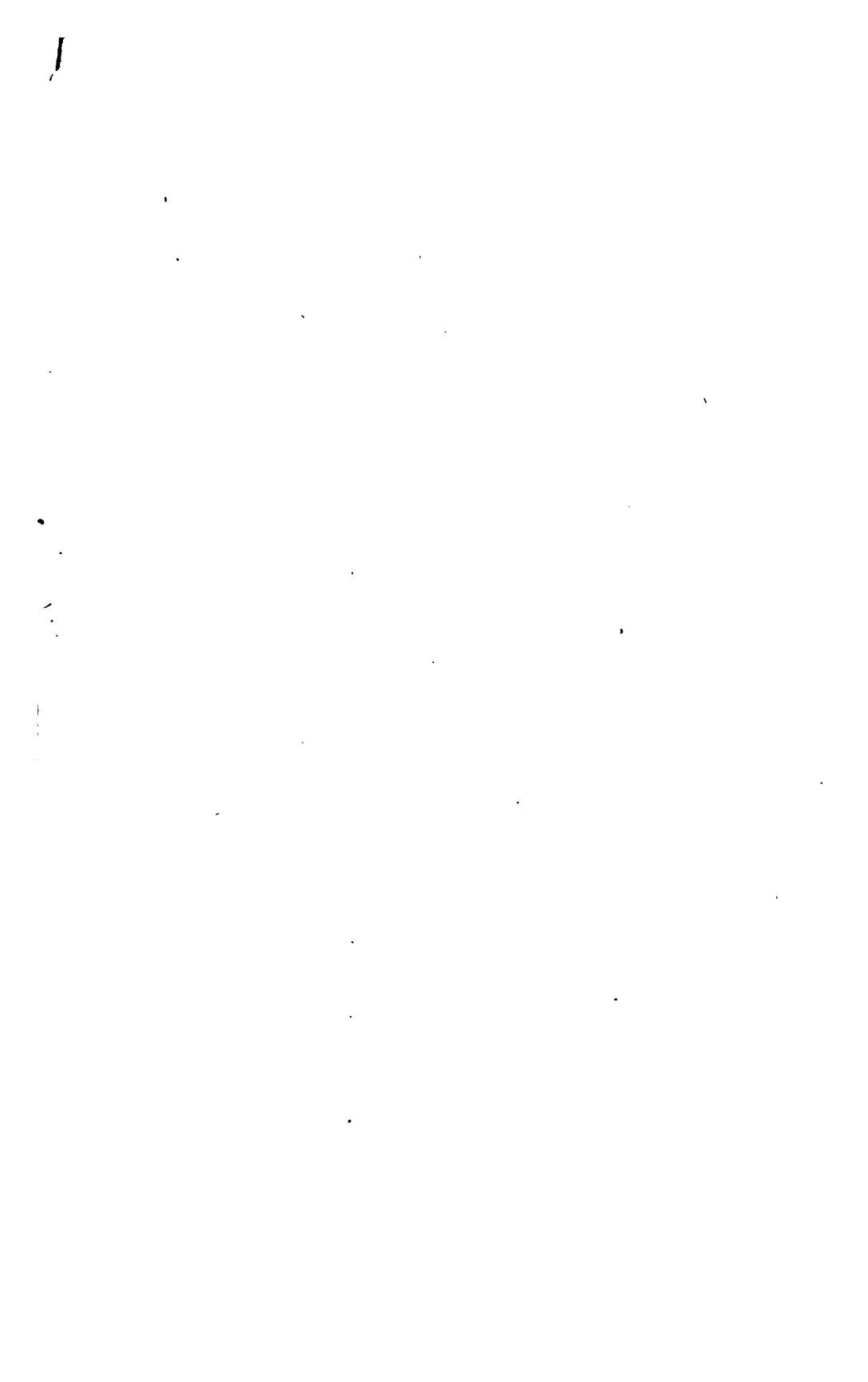
We also ask that you:

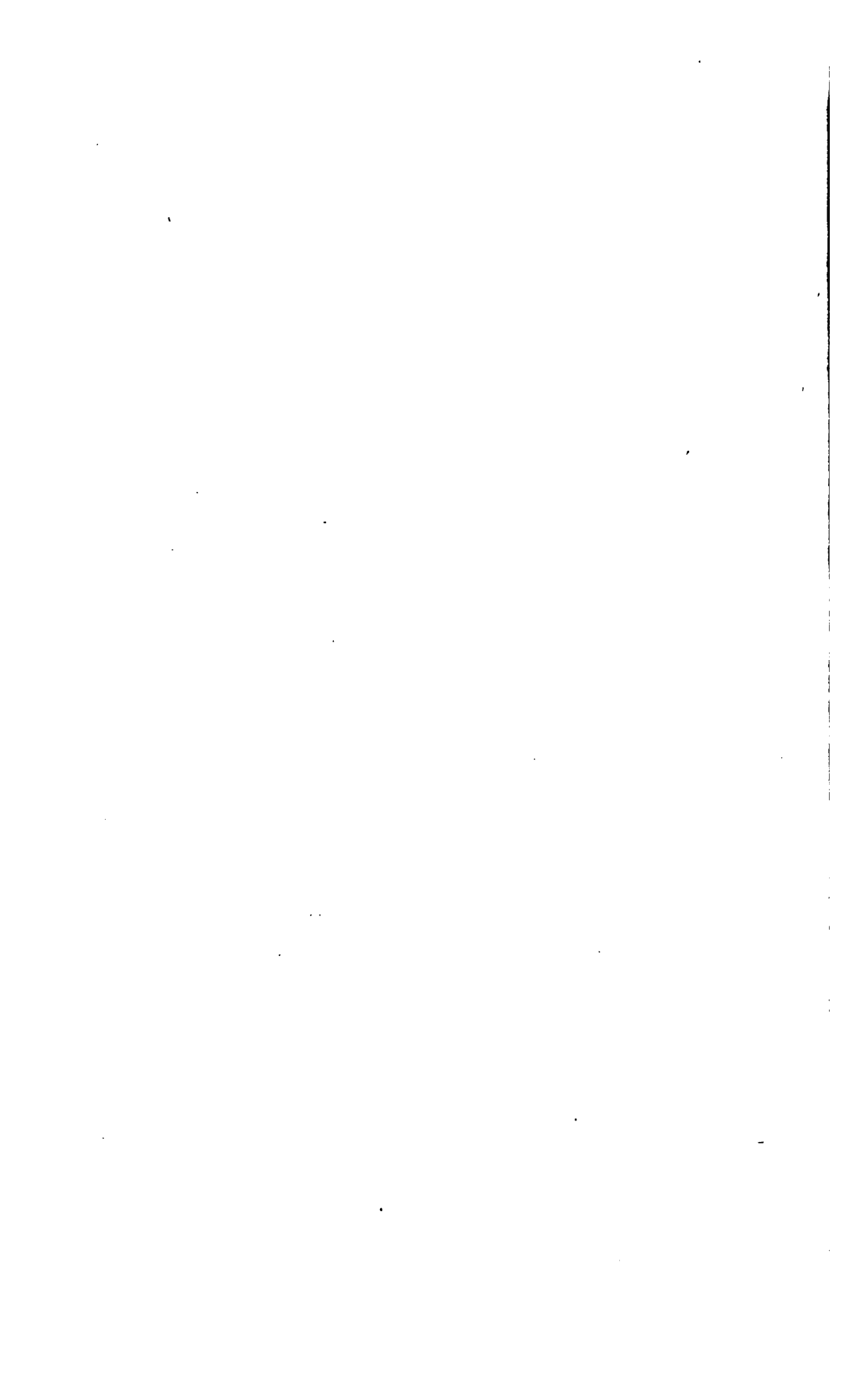
- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>







THE
MUSEUMS JOURNAL

THE ORGAN OF THE MUSEUMS
ASSOCIATION.

EDITED BY

E. HOWARTH, F.R.A.S., F.Z.S.,

Museum & Art Gallery, Sheffield.

★

ASSISTED BY

W. E. HOYLE, M.A., and F. A. BATHER, M.A., D.SC., in ENGLAND;

A. B. MEYER, M.D., GERMANY; F. A. LUCAS, UNITED STATES;

BERNARD H. WOODWARD, F.G.S., AUSTRALIA;

W. L. SCLATER, M.A., F.Z.S., SOUTH AFRICA;

AND

CAPT. F. W. HUTTON, F.R.S., NEW ZEALAND.

VOL. I.

JULY, 1901, to JUNE, 1902.

LONDON :

DULAU AND Co.

1902.

AM 1.57.35(1) 12-1-1900

INDEX.

	PAGE		PAGE
Aberdeen, Art Gallery ..	204	Art Gallery, Leeds, gift to ..	336
Abyssinia, Crown of Bishop of.	31	— — Llandudno ..	235
Acclimatising Animals ..	149	— — Newcastle-on-Tyne, Laing ..	81
Aepyornis egg sold ..	335	— — Rome ..	247
Agatized Wood, U.S. National		— — Walker, Liverpool ..	206
Park ..	149	— — West Australian Letters	
Ainu : Objects, Bashford Dean.	309	on ..	312
Aitken, lectures Whitechapel ..	116	— — Whitechapel ..	27
Alexandria, Discovery of statue	144	— — — Exhibition Pictures ..	181
Altona, New Mus: ..	61	— — — Report ..	275
American Archæology, by		— — — Wolverhampton, Bust of	
Harlan I. Smith ..	211	Queen Victoria ..	135
— Museum Journal ..	339	Art Insurance ..	345
Ancient Persian Art ..	343	Art Lectures, by R. F. Martin.	240
Anderson, Dr. Jos.: Scottish		Art Mus: F. A. Bather on ..	105
Archæology ..	21	— — J. MacLaughlan on ..	106
— Dr. Rowand, Architect ..	13, 21	Art, Popularity of ..	275
Andrews, C. W., Coll. of fossils		Arts, Les, Review ..	264
from Egypt ..	115	Astronomical Models in Mus:	
Antillean Eruptions, The ..	364	J. G. Goodchild ..	156
Antiquaries, Society of Scot-		Auk. (<i>see</i> Great Auk)	
land established ..	20	Australian Ornithologists'	
— — London Exhibition ..	29	Union, Magazine ..	145
Archæological Society; Kent,		— West, Mus: extensions ..	133
Annual Meeting ..	50	Baker, Education and Value of	
Archæology Siberian, Find at		Mus. ..	249
Novgorod ..	146	Balfour, Sir Andrew, first Mus:	
Archer, T. C., Director Edin-		in Scotland ..	7
burgh Museum ..	10, 67	Balfour, I. B., Prof. Bot. Edin.	16
Arizona, Explorations, W.		— J. H., Prof. Bot. Edinburgh	16
Hough ..	182	Barclay, Dr. Jn., lecturer Anat.	
Army Museum, Paris ..	367	Edinburgh ..	19
Arrangement, Mineral Colls. ..	193	Barnet, Canon, Exhib. Toyn-	
Art, Animal Form in, by W.		bee Hall ..	27
E. Hoyle ..	210	Basketmakers of S.E. Utah ..	340
— at the Antipodes ..	213	Bather, F. A., Appointment,	
— Bequest, National ..	206	Brit. Mus. ..	332
— Coronation ..	274	— Art Museums ..	105
— Exhibition, Whitechapel ..	116	— Pamphlet Cases ..	127
Art Gallery, Aberdeen ..	204	— Meyer's Mus. of N.Y. [<i>rev.</i>]	72
— — Birmingham ..	28	— Meyer's Chicago Mus:	
— — Bradford gift to ..	240	[<i>rev.</i>] ..	281
— — Opening Spring Exhi-		— Specialists ..	65
bition ..	270	— The Man as Mus: Curator..	185
— — Bury ..	138	— Whitechapel Museum ..	44
— — Committees and Art ..	135		

	PAGE		PAGE
Bayonne Museum	369	Burns' Cottage, Alloway Mus..	28
Related Egg	337	Bury Art Gallery, Thos.	
Bell, Charles: lecturer Anat.		Wrigley, Coll. Pictures ..	138
Edinburgh	18	Butler, A. G., Retirement of ..	202
Bell, Jno., lecturer on Anat.			
Edinburgh	18	California University	54
Belowsky, Dr., Custos. Mus:		Campbell, A. J., Nests and	
Naturik, Berlin	245	Eggs, Australian Birds ..	145
Bement, C. S., Coll. Minerals.	143	Canadian Exploration, Paris	
Berlin, Zool: Museum ..	60	Museum	339
Bescherelle, E., Coll. Exotic		— Surveys and Museums ad-	
Mosses	143	dress, B. E. Waller	55
Bibliography of Zoology, H.		Cardiff, Welsh National	
Field	300	Museum	337
Billings, Elkanah, portrait,		Carnegie, Andrew, gift to	
Ottawa	56	Dundee	142
Bilsland, Bailie, Whitechapel		Carpenter, G. H., Museum,	
Museum	44	Irish Field Clubs	85
Bird Rocks in Gulf of St.		Cases, height of	195
Laurence	87	Casts, by Onslow Ford ..	269
Birds' Eggs, Phillip Crowley		Catalogue, British Museum,	
Coll.	207	Fossil Fishes	140
Birds of the Month, American		— Nat. Portrait Gallery ..	240
Museum, N.H.	87	— Roman Stones, Chester ..	265
Birmingham, proposed new		— Sir R. Sibbald's Museum ..	8
Art Gallery	28	— waiting for a	206
— gift of Pictures	142	Catalogues, Card, useful appli-	
Blow, Uetmar, Preservation of		cations of	297
Stone-henge	117	Cataloguing in American	
Boat Model from Roos Carr ..	208	Museums	290
Bolton, New Mus.	178	— Co-operation in	292
Boltum, Dr. J., Keeper Geol:		Chapman, Frederick, Mel-	
Instit., Berlin	143	bourne Museum	277
Borghesi Villa, Purchase ..	215	— F. M., Bird Fauna, N. Y. City	86
Bottomley, J. M., Architect		Chester, Exhibition Decorative	
Middlesbro' Museum ..	280	and Applied Arts	85
Bradford Free Library, Cata-		Chicago, Report Field Colum-	
logue, Nat. Sci.	330	bian Museum	86
Briggs Coll., Indian Basketry..	309	Children and Museums, Man-	
Brighton Museum	364	chester Art Museum	171
Bristol, Art Gallery given ..	272	Children's Museum and Library	76
Britain, Early, buried and un-		Chillon, Castle of	288
explored	29	Christchurch Museum, N. Z. ..	31
British Association, Delegates'		<i>Claosaurus annectens</i>	52
Conference	117	Clarlye, F. W., skeleton of	
— Museum (<i>see</i> Museum).		<i>Triceratops</i>	53
— Pottery, Bethnal Green Mus.	339	Clausen, Geo. and Western	
Brooklyn Institute, Children's		Australian Art Gallery ..	312
Museum	76	Coins, Greek, Greenwell col-	
Brown, G. B. Industrial Muss.		lection	50
in relation to Art	93	— new	136
— Prof. of Fine Art	17	Cole, W., Queen Elizabeth's	
Bruges Art Exhibition ..	344	Lodge	236
Brunswick, E. Stolley, Curator	118	Collection, Antiquities, James	
Buddicom, R. A., Plymouth		Smith	243
Museum	114	— Army	117
Buffalo, Public Library,		— Birds, Harper, Scarbro'	
Children's Section	76	Museum	238

INDEX.

V.

	PAGE		PAGE
Collection, Birds, Sennet ..	309	Crane, Ed., Curator of Brighton Museum ..	48
— Bulloch ..	10	— Obituary Notice ..	26
— Butterflies, Hoffman ..	309	Crombie, John, Edinburgh Museum staff ..	138
— Coleoptera, Ullke ..	52	Crowther, H., Museum Lectures ..	179
— Crania, Edinboro' ..	15	Cuba, Scientific Expedition ..	277
— Crowley, Birds' Eggs ..	207	Cust, Lionel, Catalogue National Portrait Gallery ..	240
— Dan Greatorrex ..	38		
— Drawings, J. S. Cotman ..	268	Dalton, Miss E., bequest to Victoria and Albert Museum ..	206
— Dufresne, Birds, Fossils. &c. ..	10	Dawkins, W. B., Lanc. and N. Wales Antiquities ..	29
— Ethnographical, Sir W. R. Fairfax ..	115	— Pre-Historic and Roman Manchester ..	272
— — Peel Park ..	82	Dean, Bashford, and Arthur James, Ainu Objects ..	309
— Geological, Arrangement ..	219	Deceptive Eyes ..	335
— Gold Coins, Philadelphia Mint ..	309	Denver, Birds ..	280
— Heddle Dudgeon, Minerals, Scotland ..	70	Dinosaur, complete mounted skeleton ..	52
— Hope, Entomol., Oxford Mus. ..	199	"Discovery" Colls., on voyage of ..	242
— Indian Basketry ..	309	Dog: Extinct, <i>Dinocyon Gidleyi</i> . ..	307
— Ionides, Pictures ..	141	Dolina, N. Bosnia, Ancient Pile Dwellings ..	212
— Jones, Want of Catalogue ..	206	Donaldson, Geo., collection "New Art" Furniture ..	49
— J. H. Leach, Lepidoptera ..	26	Donnelly, Sir J., Obituary ..	332
— Marine Algae, J. G. Agardh ..	143	Donner, E., gift School of Art, Manchester ..	243
— Mexican Antiquities, Dorenburg ..	309	Door-hinges, mediæval ..	101
— Mineral, Arrangement, J. G. Goodchild ..	193	Dorman, A. J., gift, Museum, Middlesbro' ..	51, 208
— Minerals, E. S. Bement ..	143	Dublin Lectures ..	364
— Moreau ..	247	Dublin Museum (see Museum)	
— Exotic Mosses, E. Besch-erelles ..	143	Duerden, J. E., Jamaican Actiniaria ..	31
— New Art Furniture, Donaldson ..	49	Dundee, Branch Libraries ..	142
— Pottery, Geol. Mus. ..	210	— Historical collection ..	337
— W. B. Pryer, Oxford Mus. ..	290	Dunkirk Harbour picture ..	49
— Railte ..	194	Dunlop, Baillie ..	31
— Roman Glass, Sir J. C. Rob-inson ..	82	Dwellings, Ancient Pile, Dolina ..	212
— Sanderson, Wedgewood ..	27		
— Sir Greville Smyth ..	241	Earthworks, early defensive ..	29
— Thomy, Thiere ..	246	Eeden, F. W. von, obituary ..	118
— Walsingham, disposal ..	337	Edinburgh, Anatomical Mus., ..	11
Colorado Beetle ..	84	— Botanical Museum ..	16
Conchological Society, Mailing List ..	297	— City Museum ..	21
Condor, Belated Egg ..	337	— Conference ..	34
Congress, International of Americanists ..	279	— — President's Address ..	7
Coniston, Ruskin Exhibition ..	81	— — Proceedings ..	57
Constantinople without a Mus. ..	248	— Fine Art Museum ..	17
Co-operation in Cataloguing ..	292	— Museum Royal College Surgeons ..	17
Cooper's, Sidney, Pictures ..	244	— Museum Science and Art ..	66
Corfield, W. H., Prof. Hygiene ..	130	— Museum Staff ..	138
Cork Exhibition ..	365		
Coronation Art ..	274		
Cox, E., Historical Collection, Dundee ..	337		
Cragin, F. W., Colorado Coll. ..	307		

	PAGE		PAGE
Edinburgh National Museum		Forged MSS.	148
Antiquities	19	Forgeries, International Con-	
— Public Museums	7	ference	116
Education, Board of, Aid to		Fossils, carboniferous, J. Young	51
Museums	172	Fossil Vertebrate, Exhibition	
Educational Authorities and		of a	367
Museums	235	Fossil Vertebrates, N. American	
Edwards, Passmore, White-		Bibliography, O. P. Hay . .	311
chapel Museum	38	Fowke, Capt., Plans Edinburgh	
Edwards, W. H., on Mounting		Museum	10
of Shells, &c.	251	Frankfort (<i>see</i> , Museum Senck-	
Egypt, Exploration Report . .	184	enberg).	
Electric Lighting in Museums .	48	French Art, danger from Fire..	246
Electrical Museum	179	Furniture, Modern Art . . .	271
Electricity for the Hair . . .	118	— — Hamburg Museum . . .	144
Elliot, Prof. Anat., Edinburgh	18	— New Art, at Victoria and	
Empress Frederick, Curios and		Albert Museum	49
Sketches	81	Gairdner, J., Pres. Roy. Coll.	
Emu, Mag. of Australia Orni-		Surg, Edinburgh	19
thologists' Union	145	Gall, W., Edin. Mus. Staff r38,	177
Ethnographical Coll., Peel Park	82	Gaulish and Merovingian Anti-	
Evans, A. J., Hon. D.C.L. . .	48	quities	50
Ewart, D., Architect	56	Geological Excavations, A. S.	
Exhibition, Bruges	277	Woodward	54
— of a Fossil Vertebrate . .	367	— Maps: Illustration . . .	221
Expeditions, Chicago, Field		— Society London, Museum . .	241
Columbian Museum	86	— Survey, Summary of progress	179
— American collecting . . .	75	— — Vienna, J. V. Zelitzko,	
Exploration, Oriental, King's		appointed	245
Journey	146	— — W. Australia	246
Fabricated MSS.	148	Geology, Arthur's Seat, Rock	
Fairfax, Sir W. R., College		Specimens	115
Edinburgh Museum	115	Geshoff, M., Director Haarlem	
Fayrer, Sir J., gift British		Museum	118
Museum Porbeagle Shark . .	141	Gill, E. L., Curator, Nat. His.	
Feney, John, gift Pictures,		Museum, Newcastle-on-Tyne	26
Birmingham	142	Gily, E., Keeper, Bot. Museum,	
Fenians and "Devils"	205	Berlin	143
Ferrill, W. C., curator Denver		Glasgow, Art Gallery & Museum	
Museum	280	Kelvingrove	314
Field Columbian Mus. (<i>see</i>		— Corporation, Gift by Sir C.	
Museum, Chicago).		Tennant	49
Field, H. H., Bibliography of		— Exhibition, Surplus.. . .	180
Zoology	300	— Gift Pictures	115
Findlay, J. R., National Por-		— Town Council, on Sunday	
trait Gallery	21	Opening	71
Fire, Precautions against . .	238	— J. Young's Coll., Carbon,	
Fire-proof Buildings, essential	282	Fossils	51
Fishes, Nile, Natural History		Glass, design, Eaton Hall . .	243
Museum	207	Goeldi, Para, Brazil	31
Fitzwilliam Museum (<i>see</i>		Goodchild, J. G., Arrangement,	
Museum)		Colls.	219
Flemish Art	334	— Astronomical Models in	
Flower, Sir W. H., Memorial		Museums	156
to	181	— Arrangement Mineral Colls.	193
Forethought, Curious	215	— Guide Coll. Minerals, Black-	
Ford, Onslow, Casts	269	burn Museum.. . . .	306

	PAGE		PAGE
Goode, G. Brown, Memorial ..	185	Holm, G. E. Swedish Academy	245
Goodsir, J., Prof. of Anatomy, Edinburgh	12	Holmes, E. M., Arranging and Indexing of Pamphlets ..	123
Gordon, Sir J. W., Chair of Fine Art, Edinburgh ..	17	— Mounting Shells ..	254
Gould, T. C., Early defensive earthworks	29, 51	— Specialists ..	65
Gowland, Preservation, Stone- henge	117	Horn, on Woman's Head ..	7
Gratacup, L. P., curator, American Museum, N.H. ..	142	Horniman, Museum, Gift Lon- don C. C.	46
Gray, R., Art at the Antipodes. — Paintings, W. Australian Art Gallery	213	Horsfall, T. C., Hon. Degree ..	333
Great Auk, curious complaint..	336	Hough, D. W., Explorations in Arizona	182
— egg sold	336	Howarth, E., Value of Teaching — Whitechapel Museum ..	44
— sold	336	Hoyle, W. E., Card Catalogues	297
Greatorex, Rev. D., collection.	38	— Lectures, Animal Form in Art	210
Greenwell, Canon, collection		— Philadelphia Commercial Mus.	107
Greek Coins	50	— Specialists	65
Grey, Sir Geo., Portrait by Herkomer	112	— Whitechapel Museum ..	44
Guide Coll. Minerals, Black- burn Museum	306	Huber, J., Bot. Section, Para Museum	331
Guildhall London, Spanish Art	49	Hugh Miller Centenary ..	204
Gunning, Dr., curator Trans- vaal State Museum	263	Hull Museum	364
		Hygiene as a subject for Museum Illustration 128, 165, 229, 255,	358
Haddon, A. C., Horniman Museum	236	— W. H. Corfield, Prof. of ..	130
Hall, Kate M., Aims of Metro- politan Borough Museum ..	234	— E. A. Parkes, Prof. of ..	129
— Smallest Museum	38	Hygienic Coll., Classification ..	168
Hall, W. J., Manchester Museum staff	26		
Hamburg, Natural History Museum	61	Illumination, Prismatic Glass ..	75
Hamilton, S. H., Scientific Ex- pedition in Cuba	277	Illustrations, Terminology ..	62
Hampson, Sir Geo., appoint- ment British Museum ..	203, 228	Imitations, Western Australian Implements	312
Harvard College (<i>see</i> Museum of Comparative Zoology).		Index-Book, Rudolph	291
Hatcher, J. B., Specimens Ver- tebrate Palæontology	52	Indexer, Rudolph continuous ..	291
Haughton, Rev. S., Anecdotes.	205	Indian Art-work	367
Haverfield, F., cataloguing Roman Inscribed Stones, Chester Museum [<i>rev.</i>] ..	265	Insects, Irritating	202
Hay, O. P., Bibliography N. America Fossil Vertebrates..	311	Insurance, Museum and Art ..	345
Hazen, T. W., director Fair- bank's Museum	142	Insurance of Loans	306
Heddle, Dudgeon Coll. Mine- rals, Scotland	70	— Regulations, Vic. and Albert Museum	27
Herdman, W. A., visit to Ceylon	138	Ionides, C., Bequest of Pictures	141
Hewitt, Ed., Curator, Vernon Park Museum, Stockport ..	114	Ireland, Old Ornaments	81
		Irish Gold Ornaments, British Museum	175
		Ironwork, French	215
		Italy, Law and Art	143
		Jackson, J. R., Retirement ..	114
		Jacobsen, Carl, Art in Denmark	147
		Jamaica, Catalogue L. and F. W. Shells, H. Vendryes ..	32
		Jamaican Actiniaria, J. E. Duerden	31, 120
		James, A. C., Coll. Ainu Objects	277
		Jameson, Dr., Professor Natural History, Edinburgh	9
		Jennings, A. V., Whitechapel Museum	39

	PAGE		PAGE
Jessop, M. K., President American Museum Natural History	26	Liverpool, Art Treasures	49
Jochelson, W., Koryak Coll. from Siberia	277	— Museum Economy	180
Johnston, Sir H. H., New Mammal discovered by	48	— — New Cases	139
Journal, American Museum	310	— Walker Art Gallery	206
— Title of	312	Llandudno, new Art Gallery	238
Jurisch, D. von, Curious Forethought	215	Macgillivray, W., Catalogue, Coll. Surg., Edinburgh	19
Kew, Botanical Collection	50	Mac Iver, Mrs., Coll. Shells	51
King, G., visit Konyunjik	146	MacLaughlan, J., Art Museums	106
Knight, C. R., Model Painting of <i>Triceratops</i>	54	— Mus. and Art Insurance Society	345
Knight, W. H., Resignation	208	Maidstone, Kent Archaeological Society	50
Konyunjik, Excavations	146	Mairland, A. Gibb., Geological Survey, W. Australia	31
Kriechbaumer, J., Retirement	245	Mammal, new (Okapia johnstoni)	48
Label, British Pottery	24	Mammoth, Expedition in search of	247
— Cape Town Museum	327	Man as Museum Curator, Memorial of G. B. Goode	185
— Hoatzin	79	Manual Training, Exhibition, Edinburgh Museum	243
— Mammoth	78	Maps, Illustration of Geological	221
— Modifications of Skeleton for Locomotion	78	— MS., of River Hull	242
Labelling, Ink for	252	Marine Algae, J. G. Agardh, Coll.	143
Labels, American	77	Masham, Lord, Gift Bradford Art Gallery	240
— Sets of	84	Masks of Great Frenchmen, Musée Carnavalet	246
— Specimens of	197	Matthew, W. D., on <i>Dinocyon gidleyi</i>	308
— Silicates	77	Melbourne, Picture Galleries	214
Lankester, Prof. Ray, Museums	176	Memorial to Sir W. H. Flower	181
— Museums and Teaching	249	Mexican Antiquities, Dorenburg College	309
Law and Art in Italy	143	Meyer, A. B., Chicago Museums [rev.]	281
Leach, J. H., Coll. Lepidoptera, British Museum	26	— Museums of New York State [rev.]	72
Leeds (see Museum)		— Visits to Museums	92
Leighton House	209	Milligan, A. W., West Australian Birds	344
Leicester, Miss E. F. Dalton's Art Coll.	206	Millport, Handbook Marine Station [rev.]	266
Lepidoptera, Leach Coll., British Museum	26	Milne-Edwards, a Bust	248
Lewes Castle, Exhibition Sussex Ironwork	205	Mineral Catalogue, West Ham	235
Loans, Insurance	306	Minerals Scotland, Heddle Dudgeon Coll.	70
Loat, W. S., coll. Nile fishes	147	Moas, More	212
Lomax, Benjn., resignation curator Brighton Museum	48	Mocatta, F. D., Gift White-chapel Museum	40
Louvre, additions	278	Monaco, Marine Laboratory	342
— danger from Fire	246	Monro, Alex., primus, gift of skeleton	18
Low, Elizabeth, horn on head	8	— — Prof. Anat. Edin.	11
Lowe, E. E., curator Plymouth Museum	114	— secundus, Prof. Anat. Edin.	12
Lucas, F. A., some American Labels	77	— tertius, Prof. Anat. Edin.	12
Library Assoc.: Plymouth meeting	89		
Light, Museums excessive	284		
Lincoln, proposed Museum	178		

INDEX.

ix.

	PAGE		PAGE
Monteatte, Alex., teacher Anat.	18	Museum, Bowes, Barnard Castle	83
Moore, J. E. S., Appointment		— Brighton, E. Crane ..	48
Royal College of science ..	114	— B. Lomax, Resign ..	48
Morgan, J. P., Coll. Gold Coins	309	— J. Minto, Director ..	363
— M. de, Excavations at Susa	343	— M. Scott, First Curator ..	48
Mounting of Shells, Economical		— H. S. Toms, Curator ..	48
Method	251	— Won for Curators ..	48
Mummy Case, contents revealed		— Bristol Report ..	241
by X rays	239	— British, Age	238
— Shaking Hands with ..	213	— Appointment Sir G. F.	
Munich, J. Kriechbaumer,		Hampson	228
Retirement of	245	— Appointments	226
Musée Carnavalet, Masks of		— Bloomsbury, Recent Ad-	
Great Frenchmen	246	ditions	80
— New Accessions	88	— Botanical Collection ..	50
— Pictures given	54	— Catalogue Fossil Fishes ..	140
— de Céramique Sèvres ..	54	— Celtic Ornaments Dispute	238
— Cluny, Discovery of Statues	143	— Chalcedonized Pine-wood	240
— Galliera, Paris	54	— Cotman Coll. Drawings ..	268
— Louvre, Mode of Enriching	119	— Crowley Coll. Birds' Eggs	207
— Night Watchman	343	— <i>Diprotodon australis</i> ..	114
— Luxembourg, Accommoda-		— " Discovery " Coll. ..	24
tion	87	— Gift of Drawings	26
Museum Administrator, qualifi-		— Egyptian Fossils	115
cation	189	— Herbarium, Propose to	
— Alloway, Burns' Cottage ..	28	transfer to Kew	268
— Altona, Städtisches	61	— Irish Gold Ornaments ..	175
— American N. H. Acquisitions		— Leach Coll. of Lepidoptera	26
183, 309		— Leon Morel Coll. Gaulish	
— Annual Meeting	308	and Merovingian Antiquities	50
— Report	52	— Library Catalogue	8
— Antiquities	182	— Natural History, Open	
— Bird Fancier	86	Free	239
— Bird Groups	182	— Rothschild Coll. Catal-	
— Coll. Ainu objects	277	ogues	268
— Coll. Fossil Vertebrates ..	54	— Porbeagle Shark	141
— Jochelson's Koryaby Coll.	277	— Dr. Stein's Archæological	
— Journal	310	Collection	148
— Mineralogy: Dr. L. P.		— C. T. Regan, assistant ..	177
Gratacup	142	— Stone Age Gallery	259
— Scientific Staff	73	— Nile Fishes	207
— Texas Expedition	340	— Geological Society	241
— U.S. National, Accommoda-		— Brooklyn, Children's Mus..	183
tion	247, 311, 340	— Calcutta, Lionelle Niceville,	
— Fossil Collecting	54	Entomologist	142
— Discreditable Condition..	309	— Canterbury, and St. August-	
— and Art Insurance	345	ine's Chair	236
— Ashmolean (Oxford)	200	— Cape Town, description ..	325
— Berlin, Botanical	143	— Vivarium	328
— Geological Institute	143	— Cardiff, Report	150
— Kaiser Friedrich, Destruc-		— Carnegie	54
tion of Paintings	277	— Annual Report	52
— Naturkunde, Appointment	245	— Disting Apparatus	310
— Zoological	60	— Carnot, Fossil Collecting ..	247
— Bayonne	369	— Caucasian, Tiflis, Publica-	
— Bethnal Green, British Pottery	339	tions	148
— Blackburn, Report	306	— Chester, Catalogue Roman	
— Borough Council	81	Stones	265

	PAGE		PAGE
Museum, Chester Exhibition ..	85	Museum, Natural History ..	61
— Chicago, Academy of Sciences (Fig.) ..	282, 285	— Horniman, Gift to London C.C. ..	46
— — Plan ..	287	— — Improving the ..	236
— — Field Columbian, Collecting Fossils ..	54	— — and Museums and Gymnasiums Act ..	203
— — Report ..	86	— Hull, Damage by Rain ..	83
— Chingford, Essex Field Club ..	28	— — New Building ..	333
— Christchurch, N.Z. ..	31	— — Publications, 106, 151, 208, 242, 364	151
— Cluny, Discovery of Heads of Statues ..	143	— — Russell Coll. Insects ..	151
— Cologne, new Ethnographical ..	143	— Hygiene, Parkes, resignation W. H. Knight ..	208
— Colombo, A. Willey, director ..	142	— Hygienic, F. Twining ..	129
— Colonial, Haarlem ..	118	— Hygiene, subject for illustration ..	128, 165, 229, 255, 358
— Colorado College ..	307	— Industrial, in their relation to art ..	93
— Comparative Zoology, Harvard College ..	340	— Ipswich, Address opening new wing ..	249
— Denver, Collection Birds ..	280	— — new wing opened ..	176
— Derby, largest number of visitors ..	217	— Irish Field Clubs ..	85
— Dorset, Roman Glass ..	82	— Kansas University, Plans ..	310
— Dresden, new ..	92	— Kew, Jackson, J. R., retirement ..	114
— Dublin, Ancient Irish Corrach ..	268	— Label ..	24
— — Demonstrations ..	181	— Porcelain at Cardiff Museum ..	152
— — Plunkett's Lectures ..	269, 364	— Lectures, H. Crowther ..	179
— Durban, Description ..	328	— Leeds, Gift to Art Gallery ..	336
— Early Catalogues ..	8	— — Museum report ..	336
— Edinburgh, Keeper Technological Collections ..	177	— Leiden, Ethnology ..	143
— — Report ..	115, 338	— Lighting ..	132
— Exhibition of Manual Training ..	243	— Louvre, additions ..	215
— — Staff ..	138	— — newly - discovered Rembrandt ..	248
— and Education, F. Grant Ogilvie on ..	45	— — (see also Musée).	
— Electrical ..	179	— Luxembourg, additions ..	212
— Epping Forest, Chingford ..	236	— Madrid Royal, Geol. Coll ..	182
— Exeter, Mr. Rowley, Curator ..	177	— Manchester, Art and Children ..	171
— Fairbanks, W. Hazen, Director ..	142	— — Electric Lighting ..	132
— Fees ..	239	— — Lectures ..	272
— Field Columbian (see Museum, Chicago).		— — Mailing List ..	298
— Fitzwilliam, Egyptian Coll. ..	334	— — Mounting Shells ..	251
— Forgeries ..	116	— — Museum report ..	83
— Geol. Pottery Collection ..	210	— — School of Art, gifts ..	243
— Glasgow and Art Gallery, history and description ..	314	— — set of Labels ..	84
— Grosvenor, Chester Exhibition ..	85	— Middlesbro', Architect ..	280
— Guide, London Antiquities ..	338	— — new building ..	51, 207
— Guildhall, J. Smith Coll. Antiquities ..	243	— Milwaukee, H. L. Ward, secretary ..	307
— Haarlem, Dr. M. Geshoff, director ..	118	— Maritzburg, Notes ..	329
— Hamburg, Modern Art Furniture ..	144	— Melbourne, F. Chapman ..	277
		— — Natural Hist. Coll. ..	30
		— New York Art ..	74
		— Metropolitan of Art, bequest to ..	55

	PAGE		PAGE
Museum, New York, aims of ..	234	Museum as Teacher	179
— new wing	368	— Transvaal State	262
— State	72	— Trivandrum, Report ..	211
— Norwich	365	— United States National,	
— Nottingham, large attend-		— children's Room	149
ance explained	217	— Victor Hugo	145
— Ottawa, new building ..	56	— Victoria and Albert, Art	
— Oxford, new Pathological		Lectures	240
Laboratory	138	— Charge for Admission ..	239
— Pitt Rivers, progress ..	199	— Classified List Photos ..	209
— — A rare Totem Post ..	206	— Presentation to	49
— University, Retirement,		— Ionides Coll. Pictures ..	141
E. B. Tyler	267	— Vienna, A. Penthen ap-	
— Para, Publications	331	pointed	143
— Report	150	— Visitors, Enumeration ..	308
— Paris, Army	213	— of Warfare, A	366
— — Industrial Art Musée		— Wanganui	201
Galliera	147	— Welsh National	337
(See also Musée.)		— Western Australian Birds	344
— Parkes, Foundation	130	— — Extension	133
— Pennsylvania Report ..	211	— West Ham, Mineral Cat. ..	335
— Perth, W. Australia	246	— — Art Gallery Opened ..	27
— Perthshire, Children's Essay		— — Exhibition	116
Competition	271	— Whitechapel Bailie Bilsland,	
— Philadelphia, Commercial		Mr. Bather, Mr. Hoyle, on ..	44
Address on, by W. E. Hoyle	107	— Whitechapel, connection with	
— Pitt Rivers (see Oxford).		Schools	40
— Plymouth, E. E. Lowe,		— — Description	38
Assistant Curator	114	— — Picture Exhibition ..	181
— Prague, Bequest	277	— — Gift from F. D. Mocatta	40
— Rome, Borghesi	215	— — Gift from W. Rothschild	40
— Ruskin, Report	150	— — Special hours for Children	333
— Salford, Peel Park Ethnolo-		— — Stepney Borough Museum	203
gical Coll.	82	— Worcester, Report	306
— Scarborough, Harper, Coll.		— — Programme	40
Birds	238	Museums, Aid to, Board of	
— Science & Art (see Edinbro').		Education	172
— Senckenberg, Frankfort, new		— American, Cataloguing ..	290
buildings	341	— — Hours of Work	295
— Sévres, additions	216	— Association Journal ..	3
— — new fittings	145	— — Objects	5
— Sheffield, Coll. Wrought Iron	141	— — Bradford Meeting,	
— History	28	announced	313
— new	177	— Chicago	281
— Smallest	38	— and Educational Authorities	235
— Soane's, Opening of for Season	270	— Educational Value of Natural	
— S. African, Annals	29, 341	History	249
— Report	342	— Electric Lighting, Possibili-	
— South Kensington	96	ties of	48
(See also Victoria Albert.)		— Journal Discussion of Title	36
— Springfield, Report	311	— of N.Y. State [rev.] ..	72
— Statistics	217	— New Zealand	200
— Stepney Borough, formerly		— Oxford	199
Whitechapel Museum ..	203	— as Shop Windows	203, 269
— Stockport, Vernon Park, E.		— Spanish	182
Hewitt, Curator	114	— and Teaching	249
— Sunday	178	— Types of	3
— A Sunday School	139	— Vandalism in	277

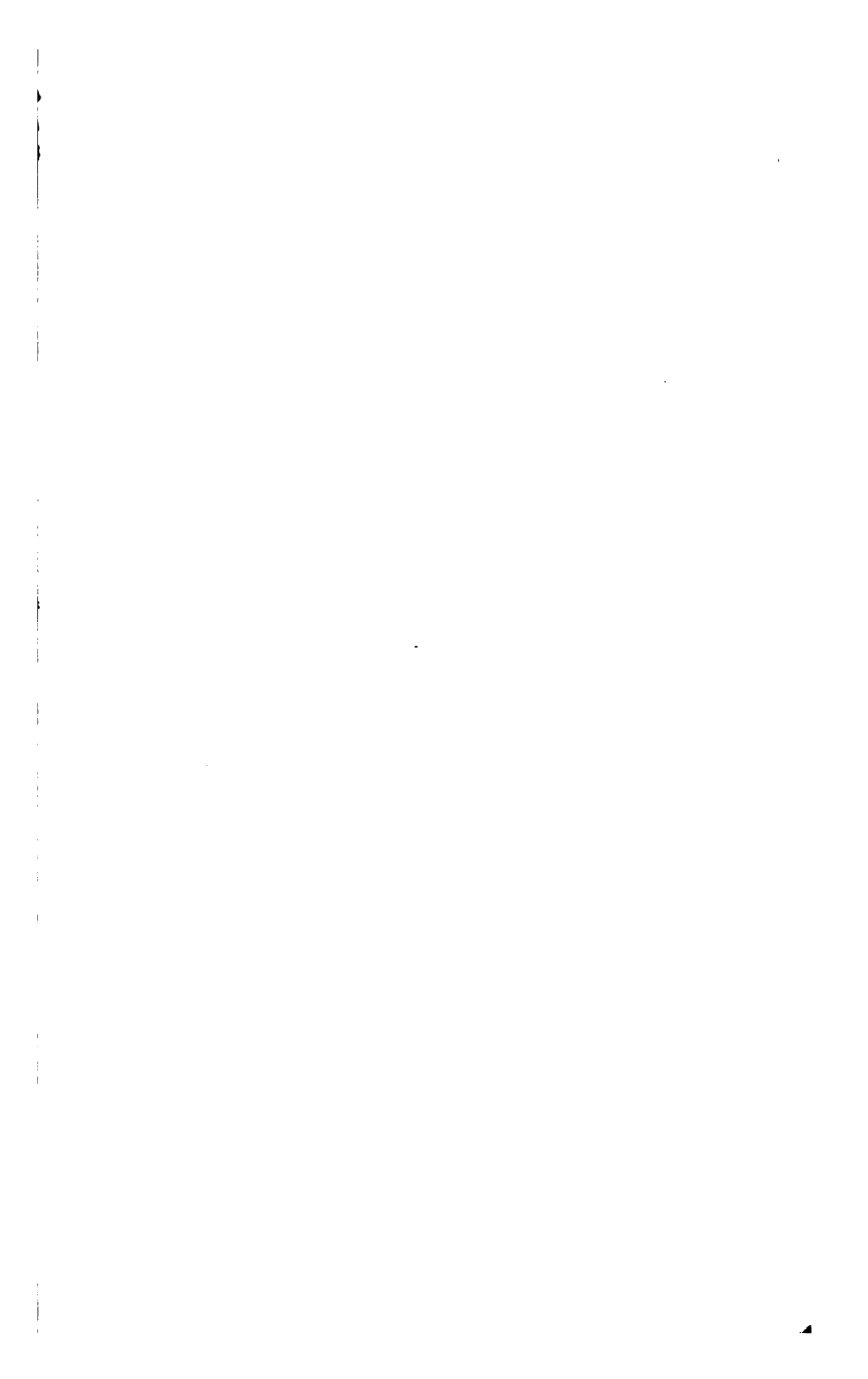
	PAGE		PAGE
National Gallery, Additions ..	238	Peabody, G. F., Coll. Indian Basketry ..	309
— Report ..	334	Pease, A. E., South African Specimens, Middlesbro' ..	208
— Venetian Room ..	81	— A. J., Natural History, Coll. ..	51
— Portrait Gallery, Annual Rep. ..	49	Penther, Assist. Zool., Vienna ..	143
— Catalogue ..	240	Pepper, G. H., Basket Makers of Utah ..	340
Nation's Pictures [<i>rev.</i>] ..	264	Perthes, J. Boucher de, Medal-lion Portrait ..	260
Nature Studies in Museums ..	164	Petrified Forest, Arizona and British Museum ..	240
Nature Study, Proposed Exhibition ..	273	Photographic Record Assoc. ..	50
Nature's Wilds ..	139	— Survey, United Kingdom ..	275
Nests and Eggs of Australian Birds, by A. J. Campbell ..	145	Photographs, Classified List ..	209
New Brunswick, Nat. Hist. Soc. Bulletin ..	341	— Preservation of ..	50
Newcastle-on-Tyne, Laing Art Gallery ..	81	Pictures and Beer, in Denmark ..	147
Newton, R. B., Nat. Geol. Colls. ..	203	— Gallery Melbourne & Sydney ..	214
New York State Museums ..	72	— Sale Commissions ..	138
(<i>See also</i> Museums, New York.)		Pikermi, Geol. Excavations ..	54
Niceville, Lionel de, Appointment, Calcutta ..	142	Pitcairn, Dr., Gift of Skeleton ..	8
Nile Fishes, W. S. Loat ..	147	Platnauer, H. M., Pamphlet Cases ..	127
Northwood, J., Cameo Decoration of Glass ..	276	— To utilize Specialists ..	63
Norwich Museum ..	365	Playfair, W. H., Architect ..	19
Novgorod, Archæological Find ..	146	Porcelain, Labels, Cardiff Mus. ..	152
		Portland Vase, Romance ..	276
Obalski, collecting in Canada ..	339	Pottery, British Label ..	24
Obituary, E. Crane ..	26	Priestley, W. E. B., President Museums' Association ..	313
— Donnelly, Sir J. ..	322	Prince and Scientist ..	342
— Eeden, F. W. von ..	118	Princeton University, Discovered Titian ..	216
— Storrie, J. ..	208	Prismatic Glass ..	75
— Tym, J. ..	80		
— Woodward, M. F. ..	113	Rain Gauge, Getting Wet ..	118
Ogilvie, F. G., Museum and Education ..	45	Raith, Coll. Arrangement ..	196
— director Edinburgh Museum ..	16	Regan, C. T., Assistant British Museum ..	177
— Edinburgh Museum, Science and Art ..	67	Registration Type Specimens ..	121
Okapi, descriptive eyes ..	335	Revealing a Mummy ..	239
Ornithorhynchus not viviparus ..	343	<i>Rhinoceros simus</i> ..	52
Owens College, Jubilee ..	332	<i>Rhinodon</i> , U.S.A. Museum ..	279
Oxford Museum (<i>see</i> Museums).		Ridgway, A. W., Death ..	143
		Robert Coll. Birds ..	248
Palæontology, Vertebrate, J. B. Hatcher ..	52	Robinson, Sir J. C., Coll. Roman Glass ..	82
Pamphlets, arranging and indexing of ..	123	Rodger, Mrs. Jas, Gift Pictures Glasgow ..	115
— cases ..	127	Rodgers, A., Edin Mus. Staff ..	138
— sizes ..	124	Rogers, J. L., Bequest Metropolitan Museum, N. Y. ..	55
Para (<i>see</i> Museum).		Rome, Villa Borghesi, for Art Gallery ..	247
Pargiter, P., Portland Vase ..	277	Rothschild, W., Gift Wicken Fenn ..	139
Paris, Garde Meuble Relics ..	88	Rothschild, W., Gift White chapel Museum ..	40
— (<i>see also</i> Musée).			
Parkes, E. A., Prof. Hygiene ..	129		
Parnell, C. S., Library ..	85		
Paton, J., Glasgow Art Gallery and Museum ..	314		

INDEX.

xiii.

	PAGE		PAGE
Rowley, F., Curator Exeter Museum	177	Stirling, E. C., <i>Diprotodon australis</i>	114
Royal College Science, J. E. S. Moore appointed	114	Stolley, E., Mineral College, Brunswick	118
Rudler, F. W., Registration Type Specimens	121	Stonehenge, Preservation	116, 272
Ruskin Exhibition, Coniston	81	Storrie, J., Obituary	208
— Museum (<i>See Museum</i>)		Struthers, Sir J., gift Anatomical Specimens	19
— Plot	139	Sunday opening, Edinburgh Museum	71
Russell Coll. Insects, Hull Museum	151	— Glasgow Town Council	71
Russian Armenia	54	Sunningdale, British Urns discovered	339
Scheuchzer, J. J., Collection presented, Zurich	307	Susa, Excavations	343
Scrater, P. L., Visit to Constantinople	248	Sussex Exhibition, Ironwork	205
— W. L., Annals of South African Museum	79	Swanton, E. W., Some South African Museums	325
Scott, M., Curator Brighton Museum	48	Swedish Academy Sciences, Dr. G. E. Holm	245
Sèvres, Musée de Céramique	54	Tennant, Sir C., Glasgow Corporation	49
Shanks, W. M., Edinburgh Museum Staff	138	Terminology, committee on	62
Sheffield (<i>see Museum</i>)		<i>Thespesius</i> , Skeleton found	52
Sheppard, T., Boat Model from Roos Carr	208	Thompson, R., North American Spear Heads	306
— Curator Museum, Hull	26	Thomy-Thiere Coll.	246
Shields, F., Design for Glass	243	Tirusch, B., bequest Prague Museum	277
Sibbald, Sir R., Early Museum Catalogue	8	Titian, Discovered	216
— Edinburgh Museums	7	Toms, H. S., curator Brighton Museum	48
Sibbald's Rorqual, T Sheppard	106	Totem Post, Pitt Rivers Museum	206
Silchester, Antiquities found	29	Toy, Willey, Ethnographical Museum, Cologne	143
Simpson, W., Gift, School of Art, Manchester	243	Townbee Hall, Exhibition	27
Sloggett, Col., Army Collectors	117	Traquair, R. H., keeper N. H. Collections, Edinburgh	10
Smith, Harlan I., American Archaeology	211	<i>Triceratops</i> , Skeleton	33
— Jas., Collection Antiquities	243	Tullis, J. T., Dr. Young's Coll. Fossils	51
— Sir R. Murdoch, Director Edinburgh Museum	10, 67	Turner, Sir W., Edinburgh, Public Museums	7
Smyth, Sir Greville, Natural History Collection	241	Twining, T., Hygienic Museum	129
Snellman, J. F., Director Museum, Leiden	143	Tylor, Dr. E. B., Retirement	267
Some South African Museums	325	Tym, J., Obituary	80
Specialists, to Utilize, by H. M. Platnauer	63	Type Specimens, Location	120
Spencer, W. Baldwin, Melbourne Museum	30	— Registration	121
Stanford University, Collection	54	Ulke, Coll. Coleoptera	52
St. Augustine's Chair, Letter from Bishop of Hereford	236	U. S. National Museum (<i>see Museum</i>)	
Stein, D., Archaeological Collections	148	Urns, Ancient British Sunningdale	339
Stelle, A. B., Edinburgh Museum Staff	138	Useful Catalogue for Students	330
		Vandeleur, Col., Army Collectors	117

	PAGE		PAGE
Vaughan, H., Drawings, British Museum	26	Wilberforce, W., Birthplace ..	333
Vendryes, H., Catalogue L. F. W. Shells, Jamaica	32	Willett, H., Gift, Ashmolean Natural History Society ..	139
Ventilation, Museums	284	Willely, A., Director Colombo Museum	142
Vertebrates, collecting Fossil ..	54	Wills, Sir W. H., Gift to Bristol ..	272
Victor Hugo Museum	145	Wilson, Dr. G., Director Edinburgh Museum	10, 66
Victoria and Albert Museum ..	366	— James, Lecturer, Anatomy, Edinburgh	18
Wales, Prince of, Presents ..	209	Woodward, A. S., Geological Excavations, Athens ..	54
Walker, B. E., address Canadian Institute	55	— Fossil Fishes, British Museum ..	140
Walker, D., Professor Natural History, Edinburgh	9	— Keeper, Geological Department, British Museum ..	203
Walsingham Collection, disposal	337	— H., Western Australia Art Gallery	312
Ward, H. G., secretary Milwaukee Museum	307	— — Letter from	34
Water-colour Drawings, for circulation	273	— — Retirement	153
Water-colours, Historical series ..	273	— M. F., Obituary	113
Waterhouse, A., architect Glasgow Art Gallery	314	Wonfor, Mr., Curator Brighton Museum	48
Watts, G. F., Portrait Lord Tennyson	112	Wrigley Collection, Bury Art Gallery	138
Webb, Ethel A. M., Utilisation of Museums	164	Yale, Dinosaur	53
Weber, L., architect Frankfort Museum	341	— University	370
Wedgwood, Sanderson Coll. ..	27	Young, J., Coll. Carboniferous Fossils	51
West Ham (<i>see</i> Museum).		Zahlbrucher, Dr. A., Keeper, Museum, Vienna	143
Western Australia	370	Zelitzko, Dr. J. V., Assistant, Museum, Vienna	245
— — Geol. Survey	145	Zoological Congress, International	59
Westminster Casts, Edinburgh Museum	67	— Gardens, Apes' House	238
Whale, Articulated Skeleton ..	51	Zürich, Concilium Bibliographicum	300
Whale Shark, Florida	279	— Weber Coll.	307
Where was the Watchman? ..	343		
Whitechapel (<i>see</i> Museum).			
Wicken Fen, Cambridge	139		





By Elliott & Fry.

.B., LL.D., F.R.S.,
President of the Royal Society, 1901.

The Museum's Association at . . .

[illegible][illegible]

Muscles have many forms, just because art and nature take many notes, and the human intellect gives various conceptions and ideas. Consequently, muscles are various, differing in structure and function to such an extent as to require classification. Thus, to mention some of the more obvious types, we may say that of —

the Museum National, the most comprehensive of all.

The Museum Artistic, to delight the eye and dazzle the mind.



Page 100

Page 101

Page 102

The Museums Association and its Journal.

WHEN a new periodical is launched amongst the miscellaneous craft which already disturb, and sometimes disfigure, the overcrowded sea of journalism, it is customary to offer some excuse for its appearance. Fortunately in the present instance no excuses are required, for everyone connected with museums, or in any way interested in them, will be sure to welcome a journal devoted to museum matters and written by experts intimately associated with museums and their work. The dogmatism and obscurity occasionally associated with expert authorship will, however, be avoided by the co-operation of a wide circle of experts, as diverse in their opinions as in the subjects of their study. The objects of the editors will be, not to enforce any individual views, but to garner a rich harvest of fact and theory, in which each reader may find some grains of value to his own work.

If the Journal merely enables its readers to realise more vividly what a museum is, or better still, what it may be made, then it will be a positive and practical influence for good. John Ruskin, who was equal to giving the precise expressive term to most things in art and nature, felt constrained to define a museum in negations. That he attempted to define it at all showed his sense of its importance, which he also displayed in a more practical manner by his attempts at forming museums as well as defining them. In no case was his attempt entirely complete or successful. Indeed it is a happy quality of museums that they never are complete, for, in the words of Brown Goode, "a finished museum is a dead museum."

Museums have many forms, just because art and nature produce many forms, and the human intellect gives varied forms to its many ideas. Consequently, museums are various, embracing art, nature, and humanity to such an extent as to require classification. Thus, to mention some of the more obvious types, we may speak of:—

The Museum National, the most comprehensive of all.

The Museum Artistic, to delight the eye and dazzle the mind.

The Museum Scientific, where the learned in classification work out the intricate mysteries of their systems, and pursue their special lines of research.

The Museum Scholastic, where students still at their classes find the illustrations of their text-books and lectures.

The Museum Educational, where the public generally are supposed to store their minds with useful knowledge.

The Museum Technological, where industry illustrates the ingenuity of its methods.

The Museum Personal, where the ideas and tastes of the individual are expounded.

The Museum Municipal, where all the objects of the other museums are supposed to be carried out under local restrictions, and where the public of towns and cities find a social institution of an attractive and intellectual character.

Various as museums are, in their contents no less than in their constitution, they have, nevertheless, many features in common, certain ends which all strive to attain. The improvement, whether of methods of exposition or of the system of administration, in any one museum, tends to the ultimate betterment of all. But the wide geographical distribution of museums renders personal intercourse between their officials and users a matter of much difficulty, so that the process of levelling up is slower than need be. The great value of this interchange of ideas has been abundantly proved by the annual congresses of the Museums Association. But these, limited as they are in time and space, cannot afford so natural an outlet for the views, inventions, or enquiries of everyone interested in museum matters, as can a widely-circulated publication appearing at more frequent intervals. The Executive Committee of the Association, in recommending the publication of a monthly journal, state in the circular sent to each museum, "It is expected that all museum officials connected with the Association will co-operate with the Editor in making the Journal a complete record of all matters concerning museums and art galleries, by contributing notes relating to their respective institutions, and by using the Journal in every way possible to promote intercommunication between individual museums and the general advancement of all." Thus may it be the means of making known what is excellent in any museum to all others! There are varying degrees of knowledge and differing ranges of experience amongst museum officials, who

315,
20-22

are never unduly bashful or churlishly reluctant in disseminating the fruit of their knowledge and experience, so that they are likely to welcome and support this, their own Journal, for diffusing, considering, and maturing all that is best for museums. The work of the Museums Association up to the present has shown the cordial manner in which the members strive to be mutually helpful, and it is gratifying to be able to provide the means for extending this usefulness by more regular intercourse than the publication of an Annual Report afforded.

Those whom this journal first makes acquainted with the Museums Association may be glad of a short history of that body. It was the outcome of a meeting held in York in 1888, at the invitation of the Council of the Yorkshire Philosophical Society. At this meeting it was decided to form a Museums Association, and the following were some of the subjects to which it was asked to give attention :—

1. Means of interchange of duplicate and surplus specimens.
2. Means of securing models, casts, and reproductions.
3. Scheme for a general supply of labels, illustrations, and information.
4. Uniform plan of arranging natural history collections.
5. Scheme for securing the services of specialists.
6. Improvement of library and museum legislation.
7. The indexing of the general contents of museums.
8. The promotion of museum lectures to working men.
9. Preparation of small educational loan collections for circulation among schools.
10. Concerted action for securing Government publications and also specimens, on loan or otherwise.
11. The issue of a Journal by the Association, and the collection of scattered original papers in the said Journal, if found possible.

The first Annual Conference of the Association was held in Liverpool in 1890. Since then there have been Annual Conferences in the following places :—1891, Cambridge ; 1892, Manchester ; 1893, London ; 1894, Dublin ; 1895, Newcastle-upon-Tyne ; 1896, Glasgow ; 1897, Oxford ; 1898, Sheffield ; 1899, Brighton ; 1900, Canterbury. Each year a volume of proceedings has been published, giving the papers read at the meetings and the discussions

thereon, with notes on museum reports and publications. Much practical information has in this way been gathered together of lasting benefit to all museums.

The Association has steadily grown year by year, and now feels itself in a position to extend its field of operations. The Annual Conferences will still go on, and their proceedings will be published in this journal through the year ; and at the same time there will be this monthly means of recording notes and news as they arise, with much greater fulness than could be done in an Annual Report. Obviously the co-operation of museums throughout the world is required to make the journal completely successful, and this the Editor and Council hope will be readily given. In addition to the Report of Proceedings at the Annual Meeting, the journal will contain :—

Current news of Museums and Art Galleries.

Descriptive Articles, with illustrations.

Reports of Museums.

Notes and Queries.

Correspondence.

Reviews of Books.

It will also furnish facilities for making known offers of exchange and sale.

Besides the matters first proposed for the consideration of the Association there have been repeated discussions on the subject of a general form of descriptive labels for museums. Some schemes have been submitted which, however, have not met with general acceptance, owing in some measure to the diverse needs of different museums. As a practical step towards helping museums in this matter, a descriptive label, framed rather to meet the requirements of the Educational Museum as previously defined, will be given each month. These will not follow any special order of subject, and will deal with large groups. Each will occupy one page, while a second page will indicate the divisions of the group, on which special descriptive labels may be written if desirable. The first label deals with British Pottery. The opinion of museum officials is invited on this and all other subjects dealt with in the Journal from time to time.

EDINBURGH CONFERENCE, 1901.

ADDRESS BY THE PRESIDENT, PROFESSOR SIR
WILLIAM TURNER, K.C.B., D.C.L., F.R.S.

THE PUBLIC MUSEUMS IN EDINBURGH.

AS this is the first occasion on which the Museums Association has assembled in the Metropolis of Scotland, it may not be without interest to relate the rise and progress of the public museums in this city. Edinburgh is well supplied with museums of various kinds. As the seat of an ancient University, of a large Medical School, and of many societies engaged in the cultivation of Science, Art, and Industry, collections have naturally been formed and accumulated. In their first inception, either through an inborn disposition on the part of individuals to observe and accumulate, or through the influence exercised by some special occupation, objects of interest were collected, which in the course of time became transferred to public institutions.

MUSEUM OF SCIENCE AND ART.

Chief in importance as regards the magnitude of the building in which it is housed, and the extent and variety of the objects which are lodged in it, is the Museum of Science and Art. The history of the rise of this museum is interesting and instructive. The original germ is to be looked for as far back as the later years of the seventeenth century, in the collections formed by two Edinburgh physicians, Sir Andrew Balfour and Professor Sir Robert Sibbald, who are memorable in the history of this city as having taken a leading part in establishing the Royal College of Physicians and the Physic Garden, the latter of which was the precursor of our present admirable Royal Botanic Garden. Both Balfour and Sibbald were indefatigable collectors, the former of natural curiosities generally, the latter, a leading naturalist of his time, of objects to illustrate the natural history of Scotland. Sir Andrew Balfour was apparently the first man in Scotland to form a museum, which he is believed to have presented to the University, for, although the bulk of the collection has disappeared, we still possess specimens, of one of which Morer, a contemporary writer, gave, in the year 1688, the following account:—"A crooked horn, divers inches long, cut out of a woman's head above the right ear, when

she was fifty years old and lived twelve years after." This hypertrophied growth of the epidermis is now preserved in the Anatomical Museum, under my charge, with a silver plate attached, on which the following legend is engraved :—"This horn was cut by Arthur Temple, Chirurgion, out of the head of Elizabeth Low, being three inches above the right ear, before these witnesses, Andrew Temple, Thomas Burne, George Smith, John Smyton and James Twedie, the 14 of May, 1671. It was a growing 7 years, her age 50 years."

Sir Robert Sibbald was a great friend of Balfour's, and in his autobiography expressed his obligation to the latter for the information which he received from him. He states how he was led to take an interest in collecting, and his remarks, although written more than two centuries ago, will, I doubt not, find an echo in the minds of many of us at the present day. "I had," he says, "from my settlement here a designe to informe myself of the naturall history this country could afford, for I had learned at Paris that the simplest method of Physick was the best, and these that the country afforded came nearest to our temper and agreed best with us, so I resolved to make it part of my studie to know what animalls, vegetables, mineralls, metalls and substances cast up by the sea were found in this country, that might be of use in medicine, or other artes usefull to human lyfe, and I began to be curious in searching after them and collecting them, which I continued to do ever since."

In 1697, Sibbald printed a catalogue of the collection which he had formed, and dedicated it to the Senate of the College, to whom he presented his museum, which he obviously regarded as a supplement to the museum which had been formed by Dr. Balfour. As this is one of the earliest museum catalogues printed in Britain, it may interest you to see a reproduction of the title-page :—

Auctarium

Musæi Balfouriani e Musæo Sibbaldiano

sive

Enumeratio & Descriptio Rerum Rariorum, tam Naturallum quam Artificialium; tam Domesticarum quam Exoticarum; quas ROBERTUS SIBBALDUS, M.D., Eques Auratus, Academiæ Edinburgenæ donavit. Quæ quasi Manuductio brevis est, ad Historiam Naturalem.

Psal. clv.

O quam multa sunt opera tua Jova, qui cuncta sapienter fecisti, cujus verum plena tellus est.

EDINBURGI,

Impressum per Academiæ Typogratum, Sumptibus Academiæ, 1697.

Sibbald's collection consisted of (1) "fossilia," under which term were included minerals, rocks, and metals; (2) vegetable substances; (3) rare productions from the animal kingdom; (4) works of art connected with the arts and sciences, along with pictures, manuscripts, and some rare books. Sibbald was the great authority of his day on the whales frequenting the Scottish seas, and his museum contained sixteen specimens illustrative of their natural history.

Two centuries ago, educational methods were essentially expositions in words, through the medium of lectures and books, and not by the demonstration of objects, and by the cultivation of the powers of observation. The enthusiasm and liberality displayed by Balfour and Sibbald were not, therefore, adequately appreciated, and did not meet with a proper response by the governing body of the College at the time, for no provision for the maintenance of the collections was made; and although certain of the pictures and editions of some of the books specified in Sibbald's catalogue are in the library of the University, the natural objects, with perhaps a few exceptions, can no longer be traced.

When Dr. Walker was appointed Professor of Natural History in 1766, he began to form a collection to illustrate his lectures; and on the foundation of the Royal Society of Edinburgh it was provided that the specimens of natural history which it should acquire should be placed in charge of the University. The natural history collections made, however, no great progress until the appointment of Professor Jameson in 1804. With great energy he applied himself for fifty years to obtain contributions from all parts of the world, and, in 1820, Jameson was enabled to lodge and display his splendid collection of animals, rocks, and minerals in two large halls built for the purpose, which formed the west side of the then recently completed quadrangle of the University. Jameson died in 1854; but before his death it became obvious that the collection had, under his rule, outgrown the spacious apartments reserved for it thirty years before in the buildings of the University.

During the year 1854, negotiations were entered into between the Town Council of Edinburgh, then the patrons of the University, and the Lords of the Committee of Privy Council, for the transference to the Government of the Natural History Museum, with the view of instituting in Scotland a National Museum, embracing both a scientific and an industrial collection. The University Museum at that time consisted of objects which had been obtained partly by legacies to the University or by gifts from private individuals;

partly by purchase from money grants from the Treasury; partly by the Principal and Professors having purchased for £4,013 the Dufresne and Bullock collections from trust funds under the administration of the Senatus of the University. The Dufresne collection consisted of 1,600 birds, 200 fossils, many invertebrate animals, and a few mammals. Some of the specimens were of great rarity, and now constitute important and valuable objects in the National Museum. At the time of Jameson's death the collection was regarded as, after the British Museum, one of the best in the country.

In 1855, a Deed of Agreement was effected between the Commissioners of Works and the Town Council, which was ratified in the same year by Act of Parliament; and it was a condition that the National Museum thus created was to be made fully available to the Professors of the University for instructional purposes. Dr. George Wilson, the Professor of Technology in the University, was made the first Director of the Museum, and the Regius Professor of Natural History was the Regius Keeper of the Museum. Professor Wilson died in 1859, and since then the office of Director has been held in succession by Mr. T. C. Archer, Sir Robert Murdoch Smith, and Mr. Grant Ogilvie. In 1873, Dr. Traquair was appointed Keeper of the Natural History collections, which then ceased to be in the charge of the Professor of Natural History.

Immediately after the transference of the collection to the Government Department, plans for a new building were designed by Captain Fowke, R.E. In 1861, the foundation stone was laid by the late Prince Consort, and in 1888, the edifice as you now see it was completed. During the thirty years that have elapsed since the building was commenced, under the energetic administration of the successive directors, with the co-operation of the scientific and industrial staff, and through the annual assistance of grants made by Parliament, for the completion of the building and for the provision of the necessary cases and other fittings, the museum has grown to large dimensions, and is a credit to the Government Department which controls it, and to the city in which it is situated. It provides, both as regards space and light, the means of displaying the extensive series of specimens in the several branches of Natural History and in the Industrial Arts, and it forms an important accession to our educational resources. The recent regulation that it is to be open free on each day of the week puts it in the power of even the poorest classes of the community to inspect and study its

varied collections. The museum has now ceased to be under the Department of Science and Art, and its administration has been transferred to the Scottish Education Department.

ANATOMICAL MUSEUM OF THE UNIVERSITY.

Side by side with the growth, during the eighteenth century, of the Museum of Natural History in the Edinburgh College, another important collection began to be formed in the same institution. The appointment by the Town Council, in January, 1720, of Professor Alexander Monro to the Chair of Anatomy in the College, gave an impetus to medical education such as it had not previously possessed. Although prior to this date professorships in medical subjects had been instituted in Edinburgh by the Colleges of Surgeons and of Physicians and by the Town Council, the opportunities of obtaining a training in medicine had been intermittent and unsystematic. As there was no proper provision in Edinburgh for the study of medicine, Monro was sent by his father to London, Paris, and Leyden. So marked was his progress, and so great was the promise of future distinction, that he was appointed to the chair when only twenty-two years of age, and in his first course is said to have had a class of fifty-seven students. During the six years succeeding, appointments were made to four additional professorships in the subjects of Medical Education, a Medical Faculty was established in the University, and a School arose in which systematic instruction was imparted, which during the eighteenth century gradually acquired a world-wide reputation. Although Monro was entitled Professor of Anatomy, his teaching embraced Surgery and such Physiology and Pathology as were included in the knowledge of the time. This combination, subject to such modifications as were demanded by the progress of medical science and by the formation of additional professorships, continued during the tenure of the chair by his son and grandson up to the year 1846. The formation of a museum is essential to those who undertake to teach Anatomy. Monro *primus*, when a student in London and on the Continent, had begun to make anatomical preparations, which he sent to Edinburgh. At first they were kept in the College of Surgeons; but as an Edinburgh mob had threatened to burn that College, Monro moved his collection to the University, where it formed the nucleus of his teaching museum, and during his incumbency of the chair the collection continued to grow. His specimens were made and employed for instructional

purposes; and as he illustrated the anatomy of man by the dissection of quadrupeds, fowls, and fishes, his museum combined human with comparative anatomy.

Monro *primus* was succeeded by his eldest son, also called Alexander, who occupied the Chair of Anatomy in the University for about fifty years. The second Monro was one of the greatest teachers of Anatomy of the eighteenth century. He was an indefatigable worker at human and comparative Anatomy and Pathology. His museum grew in accordance with his work, and became rich in specimens in illustration of the subjects on which he conducted investigations. I may especially refer to his researches on the lymphatic system and the ducts of glands, in illustration of which he made many beautiful injections with mercury, an injecting medium in the use of which he displayed great dexterity. In 1800, he presented to the University the collection formed by himself and his father. The comprehensive character of the teaching of the Monros, father and son, during the eighteenth century is illustrated by the terms of the deed of gift of the museum, by the second Monro, "to be used by his successors for the purpose of demonstrating and explaining to the students the structure, physiology, and diseases of the human body."

The Anatomical Museum of the University received few additions during the incumbency of the third Professor Monro, except in the pathological department. The appointment of Mr. John Goodsir, at first to the office of Demonstrator of Anatomy, in 1844, and two years afterwards, on the resignation of Monro, to that of Professor of Anatomy, marked a new departure. Goodsir was an enthusiastic anatomist, with a wide knowledge of both the Vertebrata and Invertebrata. His desire was to establish in Edinburgh a museum on the same lines as the great museum in London founded by John Hunter. Aided by accomplished assistants, he undertook an extensive series of dissections to illustrate the modifications in structure in different animals. Like the second Monro, he was a skilful injector of the vascular system, and the museum contains a number of specimens to illustrate the vascularity of the different organs in animal bodies. From the numerous additions which he made to the collection, the specimens outgrew the space provided for the accommodation of the Monro Museum, and their proper display became impossible.

On my appointment to the Chair of Anatomy in 1867, I determined to avail myself of the first opportunity to obtain adequate

space for the collection formed by my predecessors and for the additions made by myself. Accordingly, when arrangements were made in 1876 for the building of a new Medical School to accommodate the increase in the number of students, and to make proper provision for practical teaching, I made a claim for space for a museum sufficiently large to display the existing collection and to provide room for future additions.

Plans were prepared by the architect to the new Medical School, R. Rowand Anderson, LL.D., in consultation with me, and the Anatomical Museum, through which I hope to have the pleasure of conducting you, arose as a necessary adjunct to the class rooms and laboratories of the school, and was completed in 1885. As this is one of the largest of the most recently constructed museums associated with the display of anatomical objects, I may be pardoned for giving a short description.

The question was discussed whether the museum should consist of several separate rooms of almost equal dimensions, or of a large central hall with subordinate apartments, and it was decided to adopt the latter alternative. The main building consists of a great hall 112 feet long, 39 feet wide, and 41 feet high in internal dimensions. It gives a superficial floor space of 4368 feet, and is surrounded by two galleries, access to both of which can be obtained from the floor by a staircase at each end of the hall. An external roof equal in length to the hall forms a ridge, with two sloping sides filled with glass. Within this is a horizontal ceiling divided into panels, which are filled with ground glass, transmitting a soft, diffused light. This arrangement prevents dust from finding its way through the outer roof into the museum, and on to the objects which are not contained in cases, and between the roof and the glazed ceiling is a space and gangway sufficient to enable a man walking upright to remove any dust which may accumulate on the glazed ceiling.

The height of the hall permitted two galleries to be constructed, and as the students have access to them for the purpose of examining the objects, it was necessary that they should be sufficiently wide to enable free movement to and fro. Had the museum only been lighted from the roof the galleries would have cast a shadow on the floor and obscured the objects placed under them. Windows were therefore pierced in the side walls below the lower gallery, so as to ensure more complete lighting, an object which I think you will admit has been obtained. To diminish also the casting of a

shadow by the upper gallery on that below it, the floor of the upper gallery has been constructed of thick sheet glass set in iron frames.

Projecting on the floor from the side walls in the intervals between the windows are glass cases, which reach as far as the front of the lower gallery, and in these cases the skeletons of the smaller animals are arranged. The cases on the end walls do not, however, project so far into the hall as those on the side walls.

In the intervals between the projecting cases, glazed table cases are fixed below the windows for the exhibition of the smaller objects, and below these are cabinets of drawers for the storage of specimens. The remainder of the interval contains a table and chairs for the use of students. In the construction of the museum all superfluous ornament was rejected, for the proper decorations of a museum are the objects exhibited in it. No pillars were introduced for the support of the roof and galleries. The wood-work of the cases is mahogany, which gives more tone and richness than is obtained by the use of oak, and the cases are glazed with French plate. The shelving in some of the tall floor cases is strong plate glass, in others gridiron shelves of thin steel bars, so as to permit of the transmission of light throughout the case. The shelves are supported on hollow rods made of gas piping, which are adjustable at different heights by a simple rack arrangement. As the majority of the cases are uniform in shape and size the shelving can be transposed from one case to another should that be found necessary.

As the specimens in the upper and lower galleries are contained for the most part in glass jars and are usually preserved in spirit, neither glass nor metal gridiron shelving was applicable, and wood had to be employed. The shelves are not enclosed in glass and are not fixed, but capable of being adjusted at different levels to suit the height of the jars.

Around the front of each gallery is a table case, which gives much additional space for the display of smaller objects, whilst the ends of each gallery are occupied by tall cases with glass doors, in which specimens that require special protection can be preserved.

In the arrangement of the specimens the primary use of the museum as a teaching collection had to be kept in view, and facilities had to be provided for moving objects to the lecture rooms, in which they would be needed for illustration. As the departments which require to use the pathological specimens are in the upper floor of the building, the upper gallery of the museum has been

devoted to morbid anatomy. At each end of the gallery is a doorway which communicates with the departments concerned, so that the specimens can be readily carried to and fro. The passage of communication is closed at night by an iron door as a protection against the spread of fire, should one arise in an adjoining department.

In the lower gallery of the museum are preserved dissections to illustrate the comparative anatomy of man and animals. By means of a lift worked by the hand the specimens can be taken up and down without encumbering the staircase.

The floor of the museum is on the same story as the anatomical class room, and the specimens employed in the illustration of the lectures can be readily moved from one to the other. The central part of the floor is devoted to the display of the skeletons of the larger animals, some of which are enclosed in glass cases.

A hall of the magnitude of the one under consideration necessarily has a great space between the roof and the floor, which I have utilized for the display of the skeletons of the Cetacea in the collection. The position of Edinburgh so near to the Firth of Forth, and the fact that whales and dolphins were not unfrequently stranded on the coast, led me more than thirty years ago to commence to collect these animals whenever practicable; and although I have not secured every species frequenting the seas of Scotland, you will see a greater variety of our native species than exists, I think, in any other museum. In advising on the constructional arrangements of the museum, I had in view the proper display of the skeletons of these animals, some of which are of considerable weight. I discarded the plan adopted in some museums of supporting them on iron pillars secured to the floor, and decided to have them suspended from the roof. For this purpose the architect fixed at intervals into the roof, below the horizontal ceiling, strong steel bars extending across the hall from side to side, from which the skeletons could be suspended. Instead of stiff iron rods for the suspension, such as are employed in the Museum of the Royal College of Surgeons of England, light steel chains have been used, which give a more elegant appearance. By this plan, the great central space of the hall is well occupied; and without much effort of the imagination one can realize how these monsters of the deep float and move in their native element.

At one end of the great hall is a cabinet, 18 feet high, and with 300 superficial feet of floor space, around which is a light gallery. This cabinet is occupied by a large collection of crania of the races

of men, gathered in various parts of the world, and for the most part presented by former pupils, so that it forms a very representative collection. With the consent of the Henderson Trustees, the specimens forming the old Phrenological collection have been incorporated with it.

At the opposite end the hall opens into a vestibule, which in its turn communicates with work rooms and apartments for the storage of specimens. The museum and its subordinate apartments occupy one side of a court yard in which the rougher work of the comparative anatomist can be conducted in the open air, and in which a room for cleaning skeletons has been built.

BOTANICAL MUSEUM.

The Professor of Botany in the University is at the same time the Regius Keeper of the Botanic Garden, and conducts his classes in the garden. As an adjunct to the teaching of the subject Professor John Hutton Balfour, who for thirty-four years occupied the chair, commenced to form a collection, and in 1851 obtained the use of a room in the garden for its display. The specimens were principally contributed by the Professor and his pupils, and were intended to supplement the teaching of botany in regard to the structure and forms of plants, and their economic and medicinal products and uses. Though primarily prepared for the instruction of the students of botany, yet as the museum was open to the public, they could be seen and examined by all visitors to the garden who took an interest in the subject. Under the care of the present Professor, Dr. Bayley Balfour, the collection has been to some extent re-modelled, with the view of illustrating the life history of plants, their relation to and adaptation to environment, as shewn both in form and structure, and in pathogenic and abnormal conditions. As provision is made in the Museum of Science and Art for the exhibition of specimens to illustrate the economic and technical uses of plants, the botanical museum in the gardens does not now touch that branch of the subject, except in so far as it involves the diseases.

• The Treasury has recognised the importance of the Museum as an adjunct to the Botanic Garden, and as permitting points of structure to be displayed which cannot be readily observed in living plants as exhibited to the public. It has also recognised that additional accommodation will eventually be required for the display of the ever growing collection, and that financial provision for its maintenance is necessary.

FINE ART MUSEUM.

As our Association is holding its meeting in the Fine Art Department of the University, it is appropriate to say a few words on the collection contained in it, which, though not a public museum in the proper sense of the word, illustrates how a museum naturally takes shape in a department of a University, where object teaching is imperative.

The Chair of Fine Art was founded in the University about twenty years ago, in memory of the late Sir John Watson Gordon, P.R.S.A. In 1880, Mr. Gerard Baldwin Brown was appointed the first Professor, and he at once began to form a collection to illustrate his courses of lectures. Shortly afterwards a sum of money, bequeathed by the late Robert Cox, W.S., for the erection of a dome to complete the design of these buildings, became available, and the architect, Dr. Rowand Anderson, provided a large apartment within the dome for the display of the Fine Art Collection. A visit to this room will give you the opportunity of seeing a representative series of casts, photographs, and drawings, which have been gathered together by the Professor during the period subsequent to his appointment.

MUSEUM OF THE ROYAL COLLEGE OF SURGEONS.

The Royal College of Surgeons of Edinburgh is the oldest medical and surgical corporation in the United Kingdom. It received its first charter from James IV. in July 1505, eight years before the battle of Flodden Field, seventy-eight years before the foundation of the University, and one hundred and seventy-six years before the Royal College of Physicians of Edinburgh was incorporated by Royal Charter. In the original charter of the "surregeanis and barbouris" it is provided that before anyone can be admitted to "the maisteris of the said craft" he must be "deligentlie and avysitlie examinitt" on "anatomy," "flew-bothomea," and "the nature and substance of everything thatt he wirkis." Each year the Incorporation of Surgeons had placed at its disposal the dead body of "ane condampnit man" for the purpose of affording instruction in anatomy. Prior to the end of the 17th century a medical school and hospital did not exist in Edinburgh, and the instruction imparted to young practitioners seems to have been given exclusively by individual practitioners to those who were their apprentices. In the last decennium of that century, however, an attempt seems to have been made to introduce

collective action in the direction of teaching, and an anatomical theatre was built by the Incorporation of the Surgeons. In 1694, Alexander Monteath obtained permission to teach anatomy, and it was provided that "ane public anatomicall dissection" shall be shown in it once a year. The minutes of the college shew that in 1704 the theatre was used for purposes of anatomical demonstration by several of its fellows. In 1705 Robert Elliot was appointed Professor of Anatomy, and it was stipulated that he was to take "exact notice and inspection of the rarities in the Colledge, and that ane exact inventar be made of the same." From this extract from the records it is obvious that a collection had begun about this time to be formed. In 1702 the famous Dr. Pitcairn presented a human skeleton, and Monteath himself is recorded to have given "ane egyle" in 1709. It is also stated that in 1706 the College had a law suit with the magistrates of Dundee about the carcase of "ane elephant." The Museum also contains a skeleton presented by Monro *primus* in 1718. A collection for teaching purposes seems therefore to have been started, but there is no definite evidence that it made any appreciable growth for many years.¹

In the last quarter of the 18th century the practice arose in Edinburgh of the delivery, outside the University, by Fellows of the Colleges of Physicans and Surgeons, of courses of lectures on branches of medical education. One of the most distinguished of these teachers was Mr. John Bell, who lectured for about thirteen years on anatomy and surgery, and naturally formed a collection for teaching purposes. John Bell was the elder brother of the more famous Charles Bell, who holds an imperishable place in the history of physiological discovery of the functions of the nervous system. Charles Bell was his brother's pupil, and succeeded him as lecturer on anatomy and surgery, but in 1804 he migrated with his own and his brother John's collection to London, where he taught for about thirty years, and accumulated a large and valuable set of specimens, some of which had formed the museum of Mr. James Wilson, who for several years had been associated with Bell in the delivery of the lectures in the Hunterian School of Anatomy in Windmill Street. Having decided to dispose of his museum, Charles Bell sold it in 1825 to the Royal College of Surgeons of Edinburgh for a considerable sum of money, and the anatomical preparations were accompanied by a beautiful set of drawings from the graceful pencil of Bell himself.

¹ I am indebted for these and other particulars to the Historical sketch of the College by the late Dr. John Gairdner, Edinburgh, 1860, and to the Historical sketch of the Edinburgh Anatomical school by Sir John Struthers, 1867.

John Bell was also the master of another famous teacher of anatomy in Edinburgh, Dr. John Barclay, who lectured on the subject for twenty-seven years, 1797 to 1825. During this period he formed an extensive museum of human and comparative anatomy, which he bequeathed to the College of Surgeons in 1826, on consideration that it should be rendered useful and should retain his name.

By the acquisition of the Bell and Barclay collections, the College had obtained a museum worthy of its position as an important surgical corporation and of the rank which it had attained in 1778 as a Royal College. A suitable building for the accommodation of the collection, and for the discharge of the administrative duties of the College, became necessary, and the celebrated architect, William Henry Playfair, who did so much for the architectural adornment of the city during the earlier years of the last century, was entrusted with the preparation of the design. The new museum was inaugurated in 1832, under the presidency of the historian of the College, the late Dr. John Gairdner; and a special room was set apart for the display of the Barclay collection. The duty of arranging the specimens and preparing a catalogue was entrusted to the well-known naturalist, Dr. Wm. Macgillivray. Since that time the collection has received numerous additions through the contributions of the Fellows of the College, of whom I may especially name the late Sir John Struthers, who presented an important series of anatomical specimens, which he had accumulated during his long service in Edinburgh and Aberdeen as a teacher of anatomy. The museum, from its association with a professional body, is not a general collection, but is admirably organised to supply the wants of those who are engaged in medical and surgical education; and by permission of the College is thrown open to the public.

NATIONAL MUSEUM OF ANTIQUITIES.

Robert Burns, in his amusing poem on Captain Grose, the antiquary, describes him as one who

"had a fouth o' auld nick-nackets,
Rusty airn caps, and jinglin' jackets,
And parritch-pats, and auld saut-buckets."

Walter Scott, in one of his best novels of Scottish life, has depicted an antiquary as he presented himself in the last ten years of the eighteenth century, about the period when the Society of Antiquaries of Scotland came into existence.

The desire to possess articles, at one time the property of our ancestors, is without doubt deeply implanted in human nature. Many families look with affection on some object or other which had belonged to parent or grand-parent, and, in a smaller number of households, articles which had been in possession of still more remote ancestors, or had, perhaps, been associated with some historical event, are preserved with satisfaction and pride. The collection of such objects by private individuals living in different parts of the country, the possibility of loss when families are dispersed, and at times, perhaps, a want of due appreciation of their significance, deprives them of the educational value which they would possess, were they collected together and arranged, so that they could be compared with each other, and their historical position more accurately determined.

It was with a sense of the advisability of establishing a permanent repository for the preservation of national antiquities that in 1780, on the invitation of the Earl of Buchan, several gentlemen met together in Edinburgh and decided to establish the Society of Antiquaries of Scotland, and in 1783 the Society received from George III. a Royal Charter of Incorporation.

Donations at once began to be received, consisting of ancient weapons, dresses, charters, historical papers, poems, and coins, and it is stated that during the first ten years 16,000 articles had been presented by 1130 donors. It became obvious therefore that the institution of this society with its museum had supplied a national want. The continuous growth of the collections in the course of time so seriously taxed the resources of the Society and crippled its power of publishing the communications made to it, that it became necessary to appeal to the Treasury to take charge of the collection and to make it a National Archæological Museum for Scotland. After a four years' negotiation this was effected, and in 1851 the Society made over to the Crown, as public property, the whole collection of antiquities, coins, medals, books, &c., which it had gathered together during seventy years. In accepting this gift for the nation it was agreed that, whilst the Treasury provided fit and proper accommodation for the preservation and exhibition of the collections to the public, the curatorship of the collections should remain in the hands of the office-bearers of the Society of Antiquaries.

Four or five years after rooms were provided for the museum in the Royal Institution Buildings, Princes Street, where they remained on exhibition for more than forty years. As with other museums, the

constant addition to the number of specimens, by gift or by purchase, absorbed in the course of years all the available space, and many objects could not be exhibited. Fortunately a wealthy and public spirited citizen, the late Mr. John Ritchie Findlay, had conceived the idea of building and presenting to the Scottish people a National Portrait Gallery, and as he had for many years been an active member of the Society of Antiquaries, he determined to provide accommodation in the same building for the continually growing national archaeological collection. The handsome gallery in Queen Street from designs by Dr. Rowand Anderson was formally opened in 1890, and the specimens have now been arranged in historical sequence under the personal supervision of Dr. Joseph Anderson, our great living authority in Scottish archæology.

THE CITY MUSEUM.

Unlike many of the cities in England, Edinburgh does not possess a municipal museum, in the sense in which that term is understood by so many of my auditors. The several public museums of which I have given you a brief account, and more especially the great Museum of Science and Art, administered by a department of the State, have rendered unnecessary the formation and maintainance of a general museum by the city authorities.

About ten years ago, however, one of the magistrates of Edinburgh, the late Bailie Dunlop, who was intimately conversant with the history of his native city, and himself a collector of local antiquities, set aside, along with some of his colleagues in the Town Council, one of the rooms in the municipal buildings, for the reception of objects to illustrate the history of the city, or which might be of interest to the antiquary. In the reconstruction of the City Chambers, which is now going on, the opportunity has been taken to provide a suitable apartment for the display of the specimens, which have been acquired partly by gift or bequest, and partly by purchase. A visit to this museum will give you the opportunity of seeing many objects of historical interest; it also shows how rapidly a collection tends to grow when a suitable apartment is provided for the reception of the specimens and care is taken in their preservation.

I hope that I have not wearied you with the details of the rise and purpose of the various museums which are open for your inspection in this city. One point must, I think, have struck you in the course of my narrative, that the majority of these collections owed their origin to a desire, on the part of those who initiated them,

to illustrate the branches of knowledge, in the teaching of which they were occupied, by the display of the objects themselves. Edinburgh, perhaps more than any other city in the empire, is engaged in education as one of its prime industries, and it has realised the importance of object teaching; but many of our museums are intended, also, to serve another purpose than the exhibition of specimens; they are working collections to be used in the daily task of imparting instruction. As some of our museums have attained a respectable antiquity, they also express the historical evolution of the subjects which they are designed to illustrate, and they furnish a record of scientific activity and research; the specimens being there to appeal to should questions arise as to the accuracy of the descriptions or drawings of the objects which have been published. I cannot but think that in the case of objects which display the structure of animals and plants, the fact that the specimen is to be preserved will tend to greater precision and accuracy of observation on the part of the describer, than if they were destroyed as soon as the examination is concluded.

I am so far conservative in museum administration that no specimens which have been described or quoted in the literature of the subject to which they refer, should in my judgment, ever be put away or destroyed. Although they may be thought antiquated, and superseded perhaps by more recent observations and discoveries, and not so elegant and attractive as to retain their place as show specimens, they should be preserved in the store house of the museum as records of the handiwork of those who made them, and of the period in which they were designed and displayed.

Several of our museums also throw an interesting light on the development of education in Scotland. It is obvious that in the early years of the 18th century a great awakening occurred in this city. Notwithstanding the troubles connected with the Revolution settlement of 1688, and the disturbances attendant on the Hanoverian succession and two successive Jacobite risings, a number of sagacious and able men, in spite of the sparse population and poverty of the country, recognised the necessity of providing an expansion of University education in the direction of science and medicine. Instead of the Scottish youth being required to go to Holland, Italy, or France, to obtain a University training and degree in medicine, as had been the custom, they resolved that provision for their education should be made at home. They appreciated the importance of basing the study of medicine on a systematic training in the

and chemistry. They have been in the Botanic Garden for the last 100 years, and the circumstances of the collection of museums. It is the duty of the trustees to continue in the task of collecting objects and methods of science as important aids to the study of this object, so far as possible. I trust many of you, as trustees of the noble University of Edinburgh, will be empowered to provide the necessary funds and improvement of the collection and equipment of

A Museum Label.

BRITISH POTTERY.

VESSELS made from clay have been known in Britain from the earliest times, though it is only within the last two centuries that they have become of general use. The Ancient Britons used clay to make the urns in which the calcined bones of their dead were placed, and they had no definite objects of domestic use in pottery. The urns were formed by hand from clay mixed with gravel, ornamented by impressions made by the hands, some bone instrument, or fibre, and probably baked in the large fires kindled for the purpose of cremation. The Romans when they invaded Britain brought many of their arts with them, and their pottery shows a great advance, being turned accurately on a wheel, sometimes with an elaborate pattern of raised or depressed ornamentation, though they used few varieties of clay. The Anglo-Saxons fell back to a more primitive form of pottery, which also was shaped by turning, had sometimes raised and sometimes painted ornamentation on it. The objects were chiefly urns, vases, bowls, or dishes. The manufacture of pottery in England for general use commenced about the end of the sixteenth century, though prior to that time pottery and porcelain had been imported from the Continent and from China. The introduction of the Cologne stone ware known as the "Grés de Flandres," led to the attempt at producing similar stone ware in England. Numerous manufactories gradually came into operation in various parts of England, until pottery has now become one of the commonest materials for domestic and commercial purposes.

The manufacture of porcelain, which consisted of a white and more transparent paste, appears to have been commenced about the year 1671, at Fulham.

The ingredients used in the manufacture of pottery or earthenware consist of clay, kaolin chiefly prepared in Cornwall from granite, and flint. These are ground and mixed with water in proportions suited to the kind of paste required. They are then heated in a kiln to the consistency of dough. Metallic oxides or coloured clays are added when coloured pastes are required. The objects are then formed, either by moulding or turning on a potter's wheel or lathe. After being sufficiently dried they are placed in a kiln, heated for several days, and when drawn out are known as biscuit ware. This is white and porous, and may be painted with certain colours, or it may receive transfers from engravings, thus producing printed ware, which is hardened in a kiln. It is then dipped into a prepared substance to form a glaze, and again placed in a kiln moderately heated. As many colours suffer under heat they are often applied on the glaze, these being enamel colours, formed of glasses of different kinds mixed with metallic oxides.

The following are some of the most noted places in Britain for the manufacture of pottery and porcelain :—

Bow, or Stratford-le-Bow, Middlesex. Manufacture of porcelain commenced in 1744, and it passed into the hands of Mr. Duesbury in 1776, who transferred it to his Derby works.

Bristol pottery was made from an early date to 1837, and porcelain was manufactured there from 1765 to 1782.

Chelsea porcelain started about 1684. These works were acquired by Mr. Duesbury in 1770, who transferred the manufacture to Derby.

Coalbrookdale or Coalport. Factory founded between 1780 and 1790. Absorbed the Swansea, Nantgarw, and Caughley potteries.

Derby potteries founded before 1790 and still continue.

Fulham claims the honour of the first discovery of porcelain in England. John Dwight obtained a patent for its manufacture there in 1671.

Lambeth pottery was first produced by a Dutchman in 1676.

Doulton's Lambeth pottery was established in 1818.

Leeds ware. First reliable date 1760. Noted for Queen's ware and basket patterns.

Liverpool ware first made in 1752. John Sadler, the Liverpool potter, was the discoverer of the process of transfer printing, so common on Liverpool ware.

Lowestoft ware. Much of the pottery formerly ascribed to this place is now considered to be Oriental.

Plymouth provided the first English China factory from native materials in 1768.

Rockingham pottery was made at Swinton, near Rotherham, in Yorkshire, on the estate of the Earl of Rockingham, from 1745 to 1807.

Salt glazed ware was first imported from the Low countries, and was first made in England in 1671.

Staffordshire potteries are amongst the earliest and exist to the present day. Mason's Ironstone China was made at Lane Delph, Staffordshire. Elers' ware was first made at Bradwell in 1690. Elijah Mayor began business in Hanley in 1770. Turner ware was made at Longton from 1762. Longport has still many potteries. One of the earliest there was started about 1760.

Sunderland potteries first established about 1755. A pinkish lustre is sometimes introduced into the decoration of this ware.

Swansea pottery established in 1678. Later it was associated with the Nantgarw works.

Toft ware belongs to the Slip decorated ware, dated 1612 to 1712.

Wedgwood ware is associated with Josiah Wedgwood, the greatest of English potters, who settled at Burslem as a potter in 1759.

Worcester porcelain, 1751 to present day.



General Notes.

AT HOME.

Mr. E. Leonard Gill, B.Sc. of the Manchester museum, Owens College, has been appointed curator of the Natural History museum, Newcastle-on-Tyne, in succession to the late Mr. Richard Howse.

Mr. Thomas Sheppard, F.G.S., has been appointed curator of the Municipal museum, Hull, which has been transferred to the Corporation of that town, under whose spirited management, there is every reason to believe, its development will be accelerated and its usefulness extended.

Mr. Walter J. Hall, formerly of the Leicester museum, has been appointed assistant in the geological department of the Manchester museum, Owens College, in place of Mr. E. Leonard Gill.

Amongst the distinguished visitors received at Windsor Castle by the King and Queen in connection with the visit of the New York chamber of commerce, was Mr. Morris K. Jesup, who besides being president of the New York chamber of commerce is also president of the American museum of Natural History.

The death is announced of Mr. Edward Crane, F.G.S., of Brighton. For twenty-eight years he was a member of the museum sub-committee in that town, and its chairman from 1885 to 1893. In its report for the years 1891-2 he published a "List of the Type Specimens in the Brighton Museum," and when the collections were removed from the Pavilion to the present building in Church Street he helped in the arrangement of the geological gallery. He died on April 25th, 1901, in his 79th year.

In the department of prints and drawings at the British museum, Bloomsbury, has been recently arranged a collection of drawings by British and foreign masters, which have been acquired chiefly within the last five years. A guide to the collection has also been published, and includes works by the most eminent men of the British school of the last century. A large number of the most interesting drawings shown, both foreign and British, come from the bequest of the late Mr. Henry Vaughan, who died in 1900, leaving to the trustees of the British museum drawings and sketches to the number of nearly 400.

The National collection of lepidoptera preserved in the Natural History museum at South Kensington has (according to the *Entomologist* for June) recently been greatly enriched by the addition thereto of the almost unique collection of butterflies from Europe and central and eastern Asia, together with the collection of European moths formed by the late Mr. John Henry Leech, of Hurdcott House, Salisbury. Arrangements had been made during Mr. Leech's lifetime under which the museum became possessed of

his eastern Asian moths, and now the same public institution has acquired the still more important accessions adverted to, through the munificence of his mother, Mrs. Leech, of Kensington Palace Gardens. The museum authorities will publish a catalogue of the butterfly collection, so that it is perhaps only necessary to mention here that of *Rhopalocera* there are rather more than 18,000 specimens, representing some 1,100 species, among which are over 400 male and female types of species described by Mr. Leech. The collection of Palæarctic butterflies is very rich in Chinese and Japanese species, and in local forms and in aberrations of European species. The European *Heterocera* number about 23,000 specimens, including some fine aberrations and extensive series of the variable species. The collection of eastern Asian moths, from which the museum had already made a selection, comprised nearly 3,000 species, of which about 800 were made known to science by Mr. Leech.

The Board of Education has recently made a new regulation requiring museum authorities who receive loans from the Victoria and Albert museum to insure them against fire and theft. This regulation has come into operation in consequence of certain thefts that have occurred from museums, though it is rather remarkable that these thefts have been chiefly from national museums, or the larger institutions which are provided with fairly big staffs. Still, the proposal is a perfectly reasonable one, and as it has received attention at the conference at Edinburgh, further reference will be made to it in a future issue of the Journal.

Art lovers will be gratified to know that the remarkably fine Sanderson collection of decorative old Wedgwood, formed during the last ten years, is now arranged for exhibition at the Museum of Science and Art, Edinburgh, and that it may be inspected at any time when the museum is open. The collection may not be one of the largest, but for quality and importance it will take first rank. As it numbers 490 examples, with no duplicate specimens, all coming from over thirty well-known collections formed during the last century and dispersed owing to the death of the owners, it cannot be considered unimportant. The collection includes every known variety of colour used in Wedgwood's "jasper" material—even of the rare black and white variety. The old-time collector found it difficult to acquire even five pieces of this very limited colour in a lifetime, but this collection includes over forty pieces. There are two specimens of the rare pink plaques; so rare are these that at the loan exhibition of old Wedgwood at Liverpool in 1879, when every collector contributed, the selecting committee could not procure a plaque of that colour to exhibit—only one medallion.

The outcome of those interesting and comprehensive picture exhibitions organised by Canon Barnett at Toynbee Hall, is the permanent establishment of a handsome art gallery at Whitechapel, containing room for the exhibition of about 500 paintings. The building was opened in March by the Earl of Rosebery.

The corporation of Sheffield have lately acquired a large park at the east end of the city, and as there was a commodious house in it they have decided to devote this to the purposes of a museum. It is intended to illustrate in it the history of Sheffield by means of drawings, plans, and other historical objects, as well as to give examples of art applicable to the various industries of the city. There will also be a general collection of pictures, and a room specially arranged for the study of natural history by the teachers and scholars in the elementary schools.

The announcement that the museum of the Essex Field Club is now being classified and re-arranged in its new home at Chingford should be interesting not merely to students of natural history but to all lovers of Epping Forest. The collection is exclusively local, but naturally it is to a great extent illustrative of that magnificent woodland. The club was recently granted the use of Queen Elizabeth's Hunting Lodge at Chingford for its head-quarters, and the corporation of the city have thoroughly restored it in a careful and conservative spirit.

A new museum has been prepared at Burns' cottage, Alloway, for the reception of relics and interesting objects connected with the life and work of the poet. Many of these are well known from having been exhibited in the old museum attached to the cottage, and now demolished; but many of them are new, and are now on public view in the new hall for the first time. The objects comprise portraits, prints, various editions of the poet's works, and personal relics.

Municipalities have been so busy lately in municipalising various sorts of profitable undertakings that there is some danger of them losing sight for the time being of those deeper reaching forms of municipal advancement that do not come under the category of productive works, inasmuch as there is no financial return from them. And of all places least expected this remark applies in special degree just now to the progressive city of Birmingham. There has always been considerable pride in the art gallery there, and all who are acquainted with it will readily admit that it contains valuable treasures. The building itself is hardly worthy of them. An imposing and lofty exterior gives an impression outside of a large, commodious, and suitable interior, but when the visitor enters he finds that the art gallery is confined to a portion of the top floor of this building, the first room in which is so lighted as to show the reflection of everything except the pictures it is intended to display. In the next room iron staircases and side galleries take away every feeling of art. The city council has been asked to remedy this state of things by erecting a new art gallery of more adequate dimensions and greater suitability, and as an incentive to them to proceed with it a distinguished citizen, who is also a member of Parliament, made an offer of some valuable and desirable pictures, contingent upon a new gallery being provided; but Birmingham confesses to having too many expensive schemes on hand, therefore

the question of a new gallery stands over. Perhaps it would not be right to attribute this lack of appreciation of the loftier attributes of municipalisation to too great consideration of its commercial aspects, for there is an example of quite the opposite kind in Glasgow, which stands in the foremost of all the cities of the kingdom for its civic enterprise, and also leads the way in having just inaugurated the finest art gallery and museum of any city in the kingdom.

At the rooms of the Society of Antiquaries, Burlington House, are exhibited the antiquities found during the excavations at Silchester last year. The display is an extensive and important one, and in a striking manner enforces the desirableness and even necessity of the systematic and careful exploration of all sites of ancient habitation in this country. Local museums should pay some attention to such matters, and urge their claims to financial support from city and county councils to carry out digging operations. In this connection Professor W. Boyd Dawkins recently gave a popular address in the Manchester museum on Lancashire and North Wales antiquities, in which he referred to the many evidences of celtic occupation indicated by "barrows," "lows," &c., scattered over the country, many of which await the labours of the antiquarian, if they are not first obliterated by the work of the plough, or by the inroads of industry.

In a paper on "Early Defensive Earthworks," by Mr. I. Chalkley Gould, read before the British Archæological Association, he thus urges the subject on museum authorities:—"There is another body of men who could render good service towards popularising our subject; I refer to the curators of our public museums, who might easily enlarge small plans provided by the Archæological Societies or printed in the 25-in. Ordnance Survey, and exhibit large-scale plans such as those I show to-night, which are all on the scale of 100 ins. to the mile. Museum authorities would, no doubt, be able to provide more finished plans and diagrams than these, which are the hasty results of hurried visits: but even these would be of some interest on the walls of museums. I hope the day will come when no museum curator will be satisfied to be without a complete series, covering all the forts in the neighbourhood or county."

There have been numerous letters recently apropos of this subject in the *Standard*, urging the desirability of unearthing the buried history of Early Britain. The following two extracts are very pertinent to the question:—"Early Britain lies buried and unexplored. We have sent explorers to Chaldea, Egypt, and other countries, and through them has been revealed to us much of the manners and customs of the ancients who lived from four to six thousand years ago; but, of our own country, beyond nineteen hundred years, we know scarcely anything but the little that is told us by Julius Cæsar in his Commentaries." Another writer says,—“Take for instance Old Sarum, which affords a whole sequence of occupations, British, Roman, Saxon, Danish, Norman, and finally English. In the central plateau, and under the ploughed acres between the central

and the outer rings, lies buried our national and ecclesiastical history from the time of the Druids to the founding of the cathedral at New Sarum. This could be laid bare without in the least disfiguring the appearance of the place; and yet there the records of the past remain buried, whilst learned pundits write all sorts of surmises as to its ancient history, and sufficient curiosity has not even been aroused to clear out the old well in the centre of the ruin to ascertain what treasures have either fallen in or been thrown into it during troublous times."

ABROAD.

The Natural History collections of the National museum at Melbourne, hitherto housed in the grounds of the university (as described by F. A. Bather, *Report Mus. Assoc.* for 1894, pp. 221-226), have been moved to the buildings occupied by the Library and National Gallery, nearer the centre of the town, and on the Russell Street frontage a new Natural History museum is being erected, which, when complete, will be in part three, and in part four, stories high. Professor Baldwin Spencer tells us what is proposed in "The Victorian Naturalist" (XVII., pp. 14-16). "On the basement, partly below the level of the street, will be extensive work-rooms for taxidermists, articulators, carpenters, &c., as well as store-rooms. The first floor will consist of a main entrance hall, 110 feet by 55 feet, and on the south side of this will be store and work rooms connected with the vertebrate collection, and on the north side rooms connected with the geological collection. The second floor will contain a central hall, 110 feet by 55 feet, and on the south side rooms connected with the invertebrate collection, and on the north a lecture room and rooms connected with the mineralogical collection. On the third floor there will be rooms for macerating and the carrying on of work likely to produce unpleasant odours, while a lift will place all the floors in easy communication with one another. It will be seen that, so far as the rooms are concerned, the plan is to have on the basement and top floor the workshops, in the centre of the building the main exhibition halls, and on either side the rooms for the staff and for the housing of the reserve collections. The entrance hall will at present be devoted to the exhibition of the invertebrate objects, and to that of certain special cases illustrating mimicry, &c.; the floor of the main hall, into which the former leads, will contain the general vertebrate collection, which is now in course of arrangement, while the large gallery running all round this will be utilised for the display of the geological and mineralogical exhibits. In the old museum the arrangement adopted was a geographical one. In the new museum the animals are being arranged, in the main, zoologically—that is, for example, fishes will be classified and arranged together, all the reptiles, birds, and mammals will be similarly arranged, irrespective of where they come from, and so on through the whole series.

Amongst the mammals the system of grouping is being adopted to a considerable extent. The distribution of the animals will be indicated by coloured maps, and by means of descriptive labels attention will be drawn to the important points connected both with special animals and groups. While typical samples of our Australian fauna will find their places in the zoological series, the large hall on the second floor of the new block will be devoted exclusively to an Australasian collection, and it is to the extension and completion of this that special attention will be paid." The teaching collection in connection with the biological laboratories at the university will be maintained, while a similar collection for the teaching of geology is being formed by Professor Gregory.

CHRISTCHURCH MUSEUM, NEW ZEALAND.—This museum has acquired the collection of antiquities made by the late Mr. Robert Damon, of Weymouth, between the years 1873 and 1881. It consists of about one hundred and thirty-five pieces of Phœnician glass from ancient tombs at Tyre and Sidon, and sixty-seven pieces of terracotta, chiefly from Cyprus. Another late acquisition is the crown of the Bishop of Abyssinia, which was taken to England by the Rev. E. Goodhart, chaplain to the Forces in the Abyssinian War. It is a very old specimen made of brass, ornamented with coloured glass and hung round with small brass bells.

On account of the valuable services rendered by Dr. Emilio Augusto Goeldi to the museum at Pará, Brazil, of which establishment he has long been the director, it has been decreed by the State that the name of the museum shall be changed from Museu Paraense to Museu Goeldi.

Mr. A. Gibb Maitland, in the report of the Geological survey of Western Australia for 1899, draws attention to the dilapidated state of the only building in which all the specimens and records of the survey are housed. He urges the erection of a water-tight and properly lit building, to accommodate the whole of the national, geological and mineralogical collections, as well as the offices of the survey. We wish the government geologist all success in his endeavours.

We have received from Mr. J. E. Duerden, lately curator of the museum of the Institute of Jamaica, the second part of his account of Jamaican Actiniaria (*Sci. Trans. Roy. Dublin Soc.*, Ser. 2, Vol. 7, No. 6, 1900). Zoologists must regret that so competent a worker should have had to retire from the scene of these and other valuable labours; but a Museum Journal cannot express any opinion on this memoir, except that the author of new species should inform his readers where the type-specimens are to be found, and this Mr. Duerden has failed to do.

From the Journal of the Institute of Jamaica (Vol. 2, No. 6) we learn that the Jamaica portrait gallery has recently acquired copies

[illegible]

A. S. HUTCHINSON, —

**Naturalist, Furrier and Taxidermist to
Manchester, Sheffield, Derby and Oldham Museums.**

Undertakes all kinds of plain and artistic taxidermy. British Birds and Animals supplied at the usual prices. Private and public Museum Collections attended to and kept in good condition at a reasonable cost per annum. Work executed in any part of the kingdom.

A. S. HUTCHINSON, 85, London Road, DERBY.

FRANK SUTER & Co., Ltd.,

. . Electrical Engineers, . .

**Designers and Manufacturers of Electric
Light Fittings.**

SPECIALITY :

Picture and Museum Case Lighting . .

. . By Suter's Registered Reflectors.

FRANK SUTER & CO., Ltd.,

66, BERNERS STREET,

. . LONDON, W.

Marine Biological Association of the United Kingdom.

Specimens of MARINE ANIMALS and PLANTS specially preserved for Museum purposes. For detailed Lists and Prices apply to

THE DIRECTOR, BIOLOGICAL LABORATORY, PLYMOUTH.

NS, Ltd., ESTAB.
1846.
LONDON, E.C.

Museums or Private Collections.
Supplies to the British Museum, &c.
of any description made to order.

(Patented). 3/6 per gross.

It has a sharp needle point,
and is in any position in trays or
stands, &c. Altogether one of the
most introduced and very cheap.



3.-12/- per gross.

For holding specimens from edges of glass
or wood shelves.

Hooks for Cases, &c.

guaranteed truly tapped, bronzed
& (non-corrosive).

Medium

Large K

gross.

10/- gross.

STEEL SHELF HOOK.

Specimens from $\frac{1}{4}$ or $\frac{3}{8}$ inch shelf.

9/- per Gross.

Each shelf at same price.

THE IMPROVED SENSIBLE
"REVERSED"

Price, 3/- per gross.

For descriptive labels. Having two spikes
which are rigid when once pressed into

Sample will be sent Free on application.

THE
HERSGATE
STAND

Hersgate Stand (Patented)

For descriptive cards at any angle.

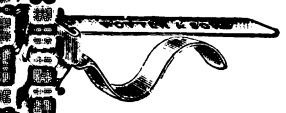
in. by 18 in. .. 10/- per gross.

in. by 24 in. .. 24/- "

Ltd., ESTAB.
1846.
LONDON, E.C.

Supplies to the British Museum,
Natural History, Horniman Museum,

Illustrations, and Samples, on



No. BT 3.
Simplex" Shelf Clip.
For holding specimens from $\frac{1}{4}$ or $\frac{3}{8}$ in.
Especially useful for long narrow
labels.
1 doz.; 15/- per Gross.



Glass-Topped Specimen Boxes.
Paper inside and black out-
side as at the Geological Museum,

Depth.		
1 in.	..	18/- per gross.
1 in.	..	21/- "
1 in.	..	24/- "
1 in.	..	27/- "
1 in.	..	31/- "
1 in.	..	36/- "
1 in.	..	37/- "
All other sizes are quoted. Any other size, on order.		
The following sizes covered		
..	..	24/- per doz.
..	..	30/- "
..	..	36/- "
..	..	42/- "
..	..	48/- "
..	..	60/- "
..	..	72/- "



Cardboard Tray for Specimens.
Depth, and finish as boxes No. 14,
are $\frac{3}{8}$ in. high.
3 4 5 6
7/6 9/- 10/6 per gross
per sizes to order.

Trays for Mounting or Writing.
Per doz.
19, 6-sheet cardboard, 2/3
19, 8-sheet cardboard, 2/6
19, 12-sheet cardboard, 3/-
19, stout tinted board, 3/6
card, 24 by 19, thick, 4/6
card, 24 by 19, medium, 4/-
card, 24 by 19, thin, 3/6
All other sizes at half the prices.

ONS, Ltd., ESTAB.
1846.
T., LONDON, E.C.
Exhibition or Private Collections.

**& BRACKETS,
CASES.**

Bracket J.

Standard Bars
Quality and Finish.

Sizes are stocked:—

ALL BRONZED.

10	12 inch.
2/3	2/9 each.
21	21 inch.
6/6	3/6 each.

ALL IRON (Warranted).

8	10	12 inch.
1/3	1/6	1/9 each.
18	21	24 inch.
3/6	4/6	5/6 each.

CASES.

We are earnestly solicited to supply well for many purposes, and are compulsory. We quote full value. Packing condition, carriage paid,

L TAPPED BAR; Brass, Bronzed, 1/- per foot.



Length not less than 4 feet.

Drop Doors - 35/- per foot.

ENDID VALUE, 9in. high - 30/-

Moveable Trays: - 25/-

22/6 "



B814.—Useful Cabinet for private Collectors or Duplicate Specimens.
Light wood covered cloth, brass handles.

15 by 12 by 8 (4 drawers) **16/6**
18 by 15 by 20 (5 drawers) **21/-**
20 by 18 by 12 (6 drawers) **25/-**
34 by 20 by 16 (8 drawers), **30/-**

Ltd., ESTD.
1846.
LONDON, E.C.
for Private Collections.

DIMENSIONS.

Total height, 6ft. 3in. (excluding ornamental iron cresting and finials).

Table Height, 2ft. 9in.; depth, 4ft. 6in.

Total height of Show Case (excluding cresting), 3ft. 6in.

Height of upper part of Show Case, 2ft. 13in.

Depth of upper part of Show Cases, 14in.

The lower portion of Show Case measures at its highest 15in., and at its lowest 9in.

Bottom of Case is covered with Claret or Blue coloured Cloth. The under part of table is fitted with Drawers, three in height and length, according to dimensions of Case. All Sashes are made on the "air-tight" principle and Glazed Plate Glass.

7ft. by 4ft. 6in. by 6ft. 3in., 18 Drawers, **£66 10/-**

9ft. by 4ft. 6in. by 6ft., 24 Drawers, **£78 10/-**

12ft. by 4ft. 6in. by 6ft., 30 Drawers, **£95**

If delivered outside London, an extra charge is made for packing, according to size, varying from £3 upwards.



any Plate-Glass Case. The top is round and top, carved pedestal with one full-sized plate glass bars and brackets. Splendid

B Quality, without pedestal or inside fittings.

215	5	0	29	17	6
18	10	0	12	15	0
21	15	0	15	10	0
25	0	0	18	10	0

above, 37/6, 57/6 & 72/6 extra, made for all purposes—any estimates and drawings supplied application.

W. D. WEBSTER,

Home Court, 24, Palace Road, Streatham Hill,
... LONDON. ...

COLLECTOR OF ETHNOGRAPHICAL SPECIMENS,
EUROPEAN AND EASTERN ARMS AND ARMOUR,
PREHISTORIC AND OTHER ANTIQUITIES.

Telegraphic Address: "ETHNICALLY, LONDON."

ILLUSTRATED CATALOGUE published every three months. Each copy contains 20 plates reproduced from photographs, and is subscribed to by all the principal Museums in the world. Subscription 10/- per year, post free, payable in advance.

A few bound Catalogues can still be obtained at the following prices:—

Vol. 1 contains Catalogues	Nos. 1 to 10	- -	30/-
Vol. 2 ditto	Nos. 11 to 17	- -	20/-
Vol. 3 ditto	Nos. 18 to 23	- -	25/-
Vol. 4 ditto	Nos. 24 to 27	- -	25/-

The Collection consists of over 10,000 specimens from all parts of the world, any of which will be sent on approval on carriage being paid.

SPECIMENS BOUGHT OR EXCHANGED.

C. GUNDLACH & MÜLLER,

OTTENSEN, Near HAMBURG, GERMANY.

Manufacturers of all kinds of GLASS JARS for Museum purposes especially.
SQUARE JARS with Ground Glass Covers and Polished Face.
CYLINDRICAL JARS with Stoppers or Corks, etc., etc.

ALL ORDERS WILL BE PROMPTLY EXECUTED.

FIRST-RATE REFERENCES ON APPLICATION.

C. GUNDLACH & MÜLLER.

Photographs of in their SUMMER and WINTER appearance, with
Familiar Trees enlarged views of their bark, leaves, flowers and
fruit. . . .

Plants and Flowers showing details of structure and growth.

MAY BE SEEN at the British Museum; Royal Art Library, South Kensington; University College, London; University College, Liverpool; Museum of Science and Art, Edinburgh; &c., &c. Lists on application.

HENRY IRVING, The Rowans, BROMLEY, KENT.

Museums Association.

THE EDINBURGH CONFERENCE, 1901.

With all the attractions which Edinburgh can boast, a visit to that fair capital must at any time afford considerable enjoyment, and no doubt all the delegates to the Conference of the Museums Association anticipated a pleasant and satisfactory meeting. In this they were not disappointed. For beyond the natural beauties of Edinburgh, which have exerted such harmonious influence on the architecture of the city, both public and private, testifying to the good taste and cultured sense of the citizens whether in corporate or individual character, there are so many institutions devoted to art, science and literature, that the museum enthusiast has no lack of material for his inspection and study. One delegate claimed to have visited all the museums of Edinburgh, and on the completion of his self-imposed duty remarked that he had done a hard week's work. Properly he ought to have felt refreshed by such a week of exceptional enjoyment.

All who were present agreed that the Edinburgh meeting, in the complete and happy combination of graceful hospitality, cordial good-fellowship, and the high level of the papers and discussions, afforded entire satisfaction, while, in a very marked degree, it still further promoted the reputation and progress of the Association.

It was a source of regret to all present that the retiring president, Dr. Henry Woodward F.R.S., who, with genial manner, consummate tact and happy directness of purpose, had so ably presided over the conference at Canterbury last year, was unable to be present owing to ill-health. This must have been a great deprivation to Dr. Woodward, who would have found himself so thoroughly at home in spirit and feeling with the gifted citizens of Edinburgh who took part in our proceedings.

At the opening meeting the secretary read the following letter, explaining the unwilling and regrettable cause of Dr. Woodward's absence, and there was a very hearty expression of feeling that he would soon be restored to good health:—"Lyme Regis, 6th July, 1901. Gentlemen,—I have to ask your kind forbearance when I express my regret that I am unable to attend the meeting of the Museums Association this year in Edinburgh, to resign the chair in

favour of the eminent man—your president-elect—Sir William Turner, K.C.B., F.R.S., who has so kindly consented to preside over your meeting for 1901. Having been advised by my medical man to abstain from over-fatigue, and to avoid meetings as much as possible, I have, acting under that advice, taken a country holiday, and for the first time for years am enjoying a complete rest—only interrupted by the omni-present postman. I have to thank you very much for the great honour you have done me in placing me in the distinguished position of president during the past year and, in resigning office, to express the hope that the Edinburgh meeting will be even more successful than that of Canterbury both as to the number of your members and the value of the contributions made to your transactions. Wishing you every success in 1901-2, I have the honour to be, gentlemen, yours very gratefully and sincerely, HENRY WOODWARD, retiring, president."

Sir William Turner, K.C.B., in accepting the office of president of the Museums Association during the year he held the same office in connection with the British Association, showed in a very gratifying manner his interest in the work of museums, which he has done so much to foster.

His address, which was published in the first number of the Journal issued in July, was a masterly and luminous review of the Museums of Edinburgh, while his wide experience and extensive knowledge was most valuable in conducting the discussions that arose on the various papers. His cordial manner to the members, and his close attention to all the duties of the Conference not only ensured the smooth working of the proceedings, but gave to them a special value which will always make his connection with the Association one of grateful remembrance.

Too often the office of the vice-presidents is deemed of a more or less ornamental character, not by the desire of the Executive, but owing to the disposition of those who fill the office. At Edinburgh we were singularly fortunate in our vice-presidents, and the ready and hearty way in which they actively promoted the operations of the Conference was specially gratifying. It is not every day that a curator can have the inner judgment of the collector and donor to a museum so thoroughly expounded as was done by one of the vice-presidents, whose keen sense of humour is equalled by the penetrating shrewdness of his perception, added to which is such a true idea of proportion that makes his generosity of gifts doubly acceptable on account of his accurate estimate of their value.

The attendance of members was quite equal to the average and the paper read covered a very wide field of museum work and administration.

"How to utilise specialists" by Mr. H. M. Platnauer was a practical contribution to a subject that often vexes the curatorial mind, and has on several previous occasions engaged the attention of the Association.

"The smallest museum" by Miss Kate M. Hall was a modest account of the museum at Whitechapel, which, in spite of its limited dimensions carries out its educational operations with a complete directness that larger and more pretentious museums scarcely accomplish. The Whitechapel museum is a most useful study as embodying the perfect museum ideal carried into practice.

"Museum and Art Insurance," by Mr. John Maclauchlan, had the effect of revealing the varying qualities of commercial aptitude that museum officials display. It ought to have the further result of systematising the method of insurance so as to make the cost uniform throughout the country.

Mr. Buddicom in his remarks on a "Museum in temporary premises," illustrated by lantern slides, displayed all the richness of idea that belongs to the new curator, with a praiseworthy amount of practical ingenuity in designing exhibition cases.

Mr. Hoyle has brought card cataloguing to that scientific perfection which makes its use a marvel of easy simplicity. It is to be hoped he will explain and illustrate his methods in the Journal for a wider circle than was able to hear his remarks at Edinburgh.

Pamphlet boxes came in for a good deal of criticism after the reading of Mr. Holmes' paper on the "Arrangement of Reprints," and obviously a perfect box for storing pamphlets so that they can be readily referred to has yet to be devised.

The three papers by Mr. J. G. Goodchild with their direct application to the exhibition of objects in museums were of special practical value, as was also the useful museum microscope exhibited and described by Mr. Grant Ogilvie.

"An economical method of mounting small shells," by Mr. W. H. Edwards, had the still further merit of being exceedingly neat and attractive.

"The relation of Industrial Museums to Art," by Professor G. Baldwin Brown, was full of thoughtful criticism and suggestion, while the literary charm of the paper made it a delightful pleasure to listen to.

All the papers will be published in due course in the Journal.

In submitting to the members a specimen copy of "The Museums Journal" to enable them to decide on the practicability of issuing a monthly publication, the Executive Committee appeared to have disarmed all criticism, for the Journal was adopted in the form in which it was submitted, and it was unanimously decided to publish it monthly. The original title of "Musea" which had been provisionally adopted, was altered to "The Museums Journal," the curatorial instinct for definitions in names asserting itself against the more modern method of a readily quotable title of a single word.

The proceedings at the business meeting showed that the Association was in a prosperous financial condition, and is steadily growing in numbers. The minutes of the business meeting, together with the financial statement and register, is issued to members and associates as an inset to this number of the Journal, and should be retained for binding with the volume for the year.

The functions of the annual meeting brought out a very warm feeling of good-fellowship from the civic authorities, as well as from the professional and museum side. The luncheon given to all the members by the Lord Provost in the City Chamber displayed not only the lavish hospitality of the municipality, but evinced the warm appreciation of the work of the Association and of the value of museums in civic life as set forth in the excellent speech of the chairman. A pleasant feature of this function was the eloquent speech of Dr. J. C. Cox, President of the Australian museum, Sydney, in which he stated how highly prized was the work of the Association across the seas.

The reception given by Mr. and Mrs. Grant Ogilvie in the Science and Art museum brought together a large number of the citizens of Edinburgh, and afforded a most agreeable reunion, while Dr. Traquair and Mr. D. J. Vallance devoted much time and attention in guiding the visitors through the museum.

Sir William Turner made the visit to the Anatomical museum of the University delightfully instructive, as did also Dr. Dunsmure at the Museum of the Royal College of Surgeons.

It has been customary at the annual dinner to dispense with all toast lists and programmes, so as to make the function as free and sociable as possible. This method has always produced not only a thorough feeling of harmony, but each one present fully shares in all the proceedings. There was a special fitness about this arrangement at Edinburgh, for it gave a certain local colour and tone to the after-dinner speeches that was delightfully entertaining. Sir William Turner, as president, set the tone, and there was as

brilliant a display of wit as ever sparkled at the festive board. His description of the Yorkshire village was a model sermon on how to make the dry bones live merrily at the prompting of a great modern intellect, and the happy way in which he called up Ald. Brittain to explain this ancient habitation provoked a speech in the same spirit of robust humour. Mr. Maclauchlan's Celtic (not spelt with a k) reminiscences and stories had a highly relished highland flavour about them, and Dr. Traquair in leaving for a time the elucidation of the complex anatomy of fossil fishes, shone with applause as a raconteur. Mr. Grant Ogilvie, in proposing the unusual toast of "The Board of Manufactures and the Society of Antiquaries," with which he coupled the name of Sir Thomas D. Gibson-Carmichael, had rightly estimated the effect of the toast. For half-an-hour Sir Thomas Gibson-Carmichael, without moving a facial muscle to merriment poured forth a stream of the highest wit—sometimes caustic, sometimes cynical, sometimes personal—always refined and good-humoured, that excited continuously that pleasantest of all aids to good digestion—laughter. He was equally happy in his remarks in proposing the health of Dr. Dunsmure, whose response expressed the sincere pleasure he had derived from the visit of the Association to Edinburgh; a pleasure which seemed to be as genuine to the home folk as it was to the visitors.

The Conference was appropriately terminated by a visit to the Glasgow Exhibition, where the members had the opportunity of inspecting the new Art Gallery, under the guidance of Mr. Jas. Paton, secretary to the Fine Art Section of the Exhibition, and superintendent of museums in Glasgow, thus bringing to a close a most interesting and enjoyable meeting.

The Smallest Museum.

BY KATE M. HALL.

[Paper read at the Edinburgh Conference, 1901.]

MY apology for venturing to bring before this association any account of the Whitechapel museum is, in the first place, I was invited to do so by our secretary, Mr. Howarth, and thus I throw all the blame of occupying your time with such an elementary subject upon him; and secondly, because, as far as I am aware, it is the smallest museum. The largest example of any group of objects is sure to prove attractive; occasionally a certain interest is called forth by the smallest.

The Whitechapel museum is contained in one room having an area of 48ft. by 32ft. in the same building with the free library. In 1889 Whitechapel adopted the Free Libraries Act, and was the first district in East London to do so. Here, also, Mr. Passmore Edwards, now so well known as a founder of public libraries, first began his munificent work by paying the building bill of £6,454. Until the London Government Act of 1899 came into force, the library and museum were under the control of a Board of Commissioners appointed by the Whitechapel Board of Works. Now they, with one other library and two in course of erection in other parts of the borough, are controlled by the Libraries committee of the Metropolitan borough of Stepney. As the Museums and Gymnasiums Act, 1891, does not apply to London, no separate rate may be levied for the support of the museum, and it is maintained out of the library rate, which at a penny in the pound in 1900 brought in close on £2,000. The entire expenses of the museum, exclusive only of those for structural repairs, insurance, charges for cleaning the floor and lighting have been covered by £200.

Before the building was commenced the late Rev. Dan Greator, chaplain of the Sailors' Home and vicar of the Seaman's church of St. Paul in Dock Street, offered to the commissioners his collection, consisting mainly of natural history and ethnographical specimens, collected by himself and his faithful flock in various parts of the world, if suitable accommodation were provided. This offer was accepted, and the architect directed to add a museum to the library plans.

In the choice of some one to arrange these specimens the commissioners sought the advice of Professor J. W. Gregory, who was

associated at the time with the educational work of Toynbee Hall. At his suggestion, and on the recommendation of the late Sir Wm. Flower, Mr. A. Vaughan Jennings was entrusted with the work, in which he called upon me to assist him. No one could have been found more capable of making dead things speak than Mr. Jennings. Having a wide knowledge, and an all-absorbing interest in every branch of natural history, with the gift of inspiring others with enthusiasm, it is only lack of health which has prevented him from making the elementary educational museum we should all want to hear about and to see.

The library and museum were opened by Lord Rosebery on October 25th, 1892, before very much progress could be made with the arrangement of the Greatorex collection, and four cases of art exhibits lent by the Science and Art Department formed, for a time, the main attraction for visitors.

The plan of arrangement was not an easy matter to decide upon. The specimens had been gathered together with no idea of scientific sequence. Many had been stored for years, and suffered in consequence. Several of the stuffed specimens had been in life Mr. Greatorex's pets, even the alligator, some five feet long, whose skin now hangs on the east wall. On the whole, I think, perhaps, the student was considered too much, and although I have not made any serious changes in the general scheme of arrangement at first adopted, I do think it is of the greatest importance in an elementary museum in a district like ours that the objects should be as attractive as possible, without forgetting the educational work they have to do. The glamour of mystery which surrounded the problems of biological science ten years ago and attracted so many, appears to have vanished to-day, and in consequence even the curator of a small museum must present the specimens differently to the public.

The museum was lined with wall-cases 7ft. 6in. high, with the usual liberality of depth, and fitted with wooden shelves. In these it was decided, with the addition of certain specimens lent by Mr. Vaughan Jennings, and which have since been purchased, very briefly to illustrate the four great geological periods, ending with man; after these followed the small ethnographical collection, and then the animals in zoological order, also ending with man, and including fossil specimens wherever possible.

Later six table-cases, two with drawers beneath, were added. These were designed by the architect, and consequently suffer from a superabundance of woodwork and a minimum of show space. In

these the smaller geological and zoological specimens were arranged in similar order, with drawings above illustrating the classification of the groups.

The principal additions to the museum have been a very representative little collection of Egyptian antiquities, including a mummy and its case, the gift of Mr. F. D. Mocatta; sixty British birds, from the Hon. Walter Rothschild, M.P.; some of the collections formed by the Toynbee Natural History Society, and the more recent acquisition of the relics from the Court House of the old Liberty of Norton Folgate, now merged in the borough of Stepney.

Towards the close of 1893 the commissioners considered that the museum arrangement had proceeded far enough, and so for a year it was left without any expert attention. Later the commissioners desiring that the museum should be made of practical use in the education of the district, did me the honour of entrusting me with the organisation of this work.

They did not think the duties would be sufficient to engage my whole time, but called upon me to give them four days per week of six hours each.

The programme given me to carry out was as follows :—

- (a) To finish the arrangement of the museum.
 - 1. Naming and labelling of existing specimens.
 - 2. Preparing popular descriptive labels of specially interesting specimens.
 - 3. Finishing existing drawings.
 - 4. Preparing dissections of important types.
 - 5. Arranging for new specimens to fill up present gaps in the collection.
- (b) To develop the educational value of the museum.
 - 1. Arranging for popular science lectures once a month.
 - 2. Arranging demonstrations in the museum to classes from the elementary schools, Toynbee Hall, and other institutions.
 - 3. Arranging temporary exhibitions to illustrate fungi, spring flowers, &c., &c., when in season.
 - 4. Naming specimens, as far as possible, when brought by visitors, at convenient times.

Up till 1899 I had in this work a porter to assist me, who did the cleaning and kept order in the room. The porter has been replaced by a more skilled attendant, able in his spare time to assist with the mounting of specimens and other things.

Under the heading (a) the arrangement of the museum has been continued. The herbarium has been put in order, and cupboards for holding it fitted beneath one of the table-cases. A reserve collection of fossils has been mounted and arranged, and an elementary series of minerals has been started. Specimens to illustrate some of the well-known forest trees are being prepared, and will be placed in two upright cases in the centre of the room. Specimens suitable for teaching and demonstration have been prepared as required.

With regard to the educational work, the late Sir Wm. Flower inaugurated a series of popular science lectures on March 14th, 1895, and these have been continued, without interruption, in each month from October to May. As there was no available lecture-hall the museum itself had to be used. The South Kensington cases were returned, and rollers attached to our own table-cases, so that they can be moved aside and the centre of the room filled with chairs, and so made capable of holding one hundred and fifty people. It was felt that popular lectures formed an important part of the educational work, and I am sure that the teaching and inspiration given us by the very able men and women who have lectured in the Whitechapel museum have been most valuable. This alone has reconciled me to the heart-rending sight of the monthly joltings my specimens and cases have to undergo. Truly, the Whitechapel museum does not afford that sweet haven of rest and repose usually accorded to specimens which find their way into museums.

I come next to the work in connection with the schools. London is so big. There are so many children, so many schools; and such large classes in our elementary schools. Many plans were tried to tempt them to use the museum before any satisfactory one was discovered.

At first demonstration lessons were arranged for teachers, but these were not well attended. Many teachers live at a distance, and do not care to stay in Whitechapel after school hours. But I still hope one day to be able to set apart a room in which teachers may prepare their object lessons, or natural history lessons, with the objects before them, as suggested by Professor Denny in his paper on "Museums and elementary teaching" read at the Sheffield meeting of this Association in 1898. Pupil teachers frequently apply to me for assistance or for the loan of specimens, and I am struck by the amount of knowledge they have obtained from books, though often a practical question disconcerts them. Object lessons and nature knowledge are, as a rule, not taken above Standard III., and then,

as a youth of some ten summers once told me, "We pass on to *pure science* in Standard IV." But the present code gives greater freedom, and some head teachers continue the nature teaching in the higher standards. Why should not such a body as the London County Council establish Nature Knowledge Observatories in some of their many parks and connect them with a museum? Much is done to make the parks beautiful and interesting, but as far as elementary teaching is concerned the material wants to be organized, and made available in a form which can be easily assimilated and transferred.

I feel sure, if only the technical barriers could be broken down and the museum of the district made the recognised centre for the illustration of lessons given in the schools of that district, such an affiliation would prove of inestimable educational value.

The teacher is perhaps regarded as trivial and of small importance. But are not elementary teachers our instruments for training the masses, and is not the progress of our vast empire largely in the hands of their pupils?

I fear to weary you by entering into the details of the method we have adopted for the use of the museum by school classes. It may be found described on pp. 137 and 138 of the Association's Report for 1899.

I would briefly say that I strongly discourage teachers from bringing their classes to wander aimlessly round the museum. They should always come with some definite purpose, and the objects they want to study should, whenever possible, be taken out of the cases for their use.

Mr. Howarth has said (*loc. cit.*) that my syllabuses for these demonstrations to school classes suggest that I would teach the children biological science. May I here say that these syllabuses are mere lists of objects made for the purpose of informing teacher and taught what they are coming to see, and based on the list of object lessons to be given in the school, and previously sent in to me by the head teacher.

The method of using the objects is left to the teachers' discretion. As a rule the children are asked to make remarks. The remarks are then criticised and enlarged upon by the teacher, and when the child has got some definite idea in his head he puts it in his notebook or makes a sketch.

Personally, I can do very little beyond supplying the best material I have at hand for other people to use. My own aim is always not to give a child facts, but to entangle him or her in an interest and love for living things, which, I believe, will be a source

of ample, rational, and healthy occupation for leisure hours, and a continuous solace and delight throughout life. In addition to the moral effect of such an interest, I also believe that it tends to broaden the mind and open the eyes to the needs of progress.

I cannot claim to be teaching children biological science, or any other kind of science, though I do think it of the first importance that the facts children do get hold of should be correct.

As far as possible we endeavour to connect living specimens with the dead ones in the cases, that they may not think the study of natural history a study of dead things only. There are fresh specimens of wild flowers, aquaria of common fish, snails, tadpoles, &c., and breeding cages for moths and butterflies.

Besides the work with the elementary schools, the collection is occasionally used by the classes from Toynbee Hall, and the students and members of the Toynbee Natural History Society are very good in keeping the needs of the museum in mind when out on their rambles.

Our temporary exhibitions of flowers, fungi, and living bees always prove attractive, especially the last, which appeared to the auditor such an unnecessary thing for a museum to do, that he was on the point of surcharging the item for the hire of the observatory hive, when the account was first submitted to him. Nevertheless, the bees are not only very attractive to the general public, but the demonstrations are so much sought after by the schools, that I invariably find myself voiceless after a four days' exhibition of the observatory hive. This of course could be easily obviated, if we had suitable accommodation for exhibiting the hive during the whole season.

Such is our museum and such is the work it has tried to do. It does not pretend to be more than what Sir Wm. Flower called it an "introductory or stepping stone" museum, but if it can give to any of these East End children a love of living things, which shall be to them a source of pleasure and mental occupation through life, if it can sometimes help the student and the teacher, and afford a healthy half hour's occupation to some of the many passers by in our busy street, I think it is doing something for the good of mankind.

By one of the speakers at the Canterbury meeting of this Association, the Whitechapel museum was held up as a pattern to other curators. Gratifying as such a criticism of one's efforts may be, I must openly avow my opinion that no one here, could learn anything by coming to see the Whitechapel museum, but I should

gladly welcome any who are kind enough to come, for without doubt I should be the gainer of many useful hints and suggestions.

The museum is open daily from 12 till 2 p.m. and 3 till 10 p.m. On Saturdays from 10 a.m. till 10 p.m., and on Sundays from 3 till 10 p.m. The attendance records are given in the report, and show that it is appreciated by the general public, as well as the schools. The Whitechapel museum has from the first unfailingly, except during periods of cleaning or repair, kept its door open for seven hours on a Sunday, and the attendance on that day is invariably most satisfactory.

Whether its work should be enlarged, and more generously endowed with the extension of the district, is a question for the new borough Council of Stepney to decide, and it is for them to provide the precedent for other London borough municipalities, as at present they alone have a museum to control.

Mr. HOWARTH commented on the great value of the direct practical teaching at Whitechapel, and suggested the desirability of organising a definite method for school classes to visit museums systematically.

Bailie BILSLAND, speaking as a representative of a municipality, expressed his high appreciation of the museum controlled by Miss Hall, and of the admirable use being made of it by means of systematic visits from school classes, by lectures and excursions. He added that the authorities of Glasgow were desirous of rendering their institutions similarly useful to all classes of the population, and he had no doubt they and others would be much encouraged by the example and success of Miss Hall.

Mr. BATHER reminded the meeting that all the admirable work accomplished by the founders of the Whitechapel Museum and by its curators, as well as the influence exerted and the interest aroused by the work of Miss Hall, had recently been transferred from the Library Commissioners to the new borough of Stepney. The borough was certainly to be congratulated on succeeding to this inheritance, in which it was unique among the boroughs of London. The curators from all parts of the United Kingdom there assembled would look with anxiety to see how the new borough would fulfil its responsibilities in the matter. And since the boroughs were usually credited with being more enlightened than the old vestries they might hope that the Whitechapel museum had now entered on an era of even increased usefulness and prosperity.

Mr. HOYLE bore testimony to the admirable arrangement of the museum and to the value of the interest excited in the district by the lectures and classes organised by Miss Hall.

Mr. GRANT OGILVIE emphasised the fact, that for museum teaching in relation to elementary education, only a small museum is necessary. In fact, a large museum often presents too many distractions for satisfactory work with young children. He hoped that local authorities would do what they could to afford facilities for the museum visits, which, with field excursions, are now encouraged alike by the Board of Education in England and by the Scotch Education Department. The latter department was having a small gallery in the Edinburgh museum specially arranged to illustrate nature teaching, as well as those stages of science and art instruction which are of importance in junior schools. That collection, however, would not be available till next winter, but he trusted that when ready it would on the one hand afford special facilities for class visits to the museum, and on the other hand prevent such visits from inflicting any discomfort or inconvenience upon older students or upon the general visitors to the museum.

Gift of the Horniman Museum to the London County Council.

THE occasion of the opening of the Horniman Museum, Library and Gardens marks an important development in the municipal history of London. On 5th February, 1901, the London County Council met to learn that for the third time since its institution twelve years ago it had the opportunity of becoming the trustee of a considerable estate which the owner, with munificence and public spirit which merit the admiration and gratitude of all classes, was prepared to hand over as a free gift for the use of the people of London. The property comprised in this offer included not only a valuable estate, but a museum specially built and equipped, and containing objects of great educational value, described in the Museums Association Report, 1900, pp. 58—63.

The offer of Mr. F. J. Horniman, M.P., was communicated through his son, Mr. E. J. Horniman, a member of the Council, in a letter addressed to Mr. W. H. Dickinson, the chairman. In this communication it was stated that the donor desired to offer as a free gift to the people of London some fifteen acres of freehold land, together with the museum, which had just been erected at a cost of about £40,000, and which contained the large art and natural history collections gathered by Mr. Horniman during the past twenty-five years.

The property is situated within a few minutes' walk of Lordship Lane Station on the South-Eastern and Chatham railway, and Forest Hill station on the London, Brighton, and South Coast railway.

In addition to the museum, the property included a large house, "Surrey Mount," and about seven and a half acres of ground, consisting of grassy slopes and laid-out gardens, occupying the summit and side of a hill commanding extensive views over south-eastern and south-western London. There is also comprised in the gift six residences and some five and a half acres of ground, producing an income of about £600 per annum. Supplementing, too, the collections in the museum is a library of books, chiefly relating to natural history and science, but also including a valuable collection of bibles.

Mr. F. J. Horniman had been in the habit of allowing the public to have access to the collections when housed in a building formerly upon the site occupied by the new museum, and also to the gardens, and this had been so largely appreciated by the people that the donor felt that, having had a new building erected to receive the collection, the time had arrived when the museum and adjoining property would be more useful if vested in a public body, and he therefore decided to offer the whole to the London County Council as a place of recreation and instruction.

The only conditions attached to the gift were of such a nature as to secure that proper and effective maintenance and administration of the property which the Council itself would most assuredly have arranged. The Council resolved to accept the offer of Mr. Horniman, and passed a unanimous vote of thanks to him, on behalf of London, for his munificent gift.

General Notes.

AT HOME.

At the summer graduation ceremonial of the University of Edinburgh, the honorary degree of Doctor of Laws was conferred on Mr. Arthur John Evans, Keeper of the Ashmolean museum, Oxford.

After being connected with the Brighton museum since the first year of its organisation, and curator since 1878, Mr. Benjamin Lomax, F.L.S., has now resigned the more active duties connected with that office. The Brighton museum was started in 1873. There were three departments—library, museum, and art gallery—under one head and all rapidly developing. Each department had its own managing committee, naturally wanting the curator's undivided application. The first curator was Mr. Scott, a talented local geologist. He gave the museum its permanent form, and that cast towards geology which has ever since distinguished it. Mr. Scott died after eighteen months hard work, and was succeeded in 1875 by Mr. Wonfor, an all round naturalist and rather a specialist in lepidoptera. His main work however was devoted to the picture gallery, and to him is due the starting of those two exhibitions which have gone on so satisfactorily up to the present time. He died in 1878, and the following January Mr. Lomax was appointed. He entirely re-arranged every case in the museum except those devoted to geology, of which the late Mr. E. Crane, F.G.S., took entire superintendence. In 1891 the museum work was separated from the other departments, and Mr. Lomax, then set himself to make a manuscript catalogue of every specimen in the museum, classified throughout. It was a very big undertaking, and resulted in three great volumes like bank ledgers. The actual number of entries was 17121, each giving particulars in five columns. In 1893 Mr. Lomax commenced a series of weekly lectures on specimens in the museum, gradually working round the different rooms. These were favourably received, and have been continued by him ever since, and still go on though he has otherwise ceased all connection with the museum.

Brighton has been making extensions to its museum and art gallery, and is now concerned as to the lighting of them. Mr. H. S. Toms, the acting curator, has forwarded a circular to various museums, asking for particulars of the method of lighting. The possibilities of electric lighting are so great that it is desirable in any new building to make the installation of it as complete as possible, so as to get the best results.

The new mammal (*Okapia Johnstoni*) discovered by Sir Harry Johnston in the Congo Forest, the drawings of which were exhibited at a recent meeting of the Royal Society, has now been mounted and received at the Natural History museum, South

Kensington, where it will shortly be exhibited. This is the only known specimen in the world, and it is indicative of the popular interest which zoological discoveries now excite, that the "Graphic," on July 29, gave a coloured illustration of the okapi, from the original sketch by Sir Harry Johnston, describing it as "something between a deer and a zebra."

The annual report of the National Portrait Gallery for the year ending March 31, 1901, states that there are 1,404 portraits exhibited. The number of visitors for the year was 127,888, figures which do not indicate any wide-spread interest in the portraits. The gallery, however, appears to be more adapted to the storing of pictures than to their exhibition, and any visitor who expects to be able to view them satisfactorily is likely to be grievously disappointed.

Spanish art, as represented by the collection of pictures at the Guildhall, London, has proved so attractive that it has been decided to keep the exhibition open until August 28. It has been visited by more than a quarter of a million of people in four months.

Sir Charles Tennant has presented to the Corporation of Glasgow the picture of Dunkirk Harbour, by Sam Bough, R.S.A., at present on loan at the International Exhibition, Glasgow.

Liverpool has been recently blessed with an abundance of criticism on its art treasures, from newspaper correspondents, and the Chairman of the Art and Exhibitions Sub-Committee has rather unwisely allowed himself to be so far perturbed by this criticism as to enter on a defence of the art collection, which, as is usual in such cases, simply sets forth the fact that in his opinion the art collection at Liverpool is as good, if not better, than that of any other provincial city. This only shows how much better it would be if Liverpool trusted more to trained art judgment than to a lay committee to make choice of pictures. A suggestion was made that part of the profits made by the annual exhibitions should be used for the extension of the Art Gallery, but it was pointed out that the committee were "committed, to a certain extent, to spend in one exhibition, for the benefit of the artists, the profits of the exhibition immediately preceding." This may account for the nature of some of the purchases made.

Mr. George Donaldson has presented to the Victoria and Albert museum, South Kensington, a collection of "New Art" Furniture. His object is to exhibit them in the first instance at the museum, then to send them for exhibition successively to our chief manufacturing towns, in order that the manufacturers and artisans of this country could see what other nations are striving for in the direction of original designs not based upon past productions. The Birmingham Industrial and Polytechnic exhibition, which will be opened on Aug. 26, is to have the first loan of this collection of furniture.

The Kent Archæological Society held its annual meeting in Maidstone, on July 30 and 31, which closed with a Reception at the museum, when the curator, Mr. F. V. James, F.S.A., gave a brief lecture on its contents.

Much may be done by the preservation of photographs to help the future historian, and in many towns it is now customary to give due attention to the collection of local photographs. Improvement committees and improvement bills wipe out the old and picturesque features of a city with startling rapidity, corporations as a rule having little regard for keeping any permanent picture of the interesting old bits of a town which are wiped out by their improvements. A photographic department ought to be an essential section of the city surveyor's administration, for he is the one officially notified of all alterations to streets, or removal of buildings, and could then secure a photograph of any feature of a town worth permanently recording. The museum would, of course, be the fitting home for them, and although city surveyors have not risen to such artistic and patriotic heights as to keep a photographic record, there are towns where this work is being done by local societies, and now the Board of Education have opened an exhibition at South Kensington, of photographs, "consisting of historical and architectural subjects, and studies from nature," which ought to act as a stimulus and encouragement to all museums to do likewise in their respective districts. These photographs form a portion of the collection made by the National photographic record association.

The committee appointed by the Treasury to consider the advisability of bringing together the botanical collections now separately housed at the British museum and at Kew, have issued a report in which they recommend that the collections should be placed at Kew. Their recommendation does not include the fossil plants, which they think should remain at the British museum, as forming part of the palæontological collection. Many students of botany, as well as the authorities at the British museum, will probably offer objections to the removal of the recent plants; and as the committee were not unanimous, it is scarcely likely that Parliament will do anything further in the matter at present.

It is sometimes made a cause of complaint against our Government that they allow objects which it is desirable to keep among our national treasures to be bought by foreigners and taken from the country, as for instance the collection of Greek coins, which belonged to Canon Greenwell, and has been purchased by Mr. Warren, of Boston, for £11,000. It is, therefore, all the more satisfactory to be able to record a case of the opposite kind. The British museum has acquired by purchase the important collection of Gaulish and Merovingian antiquities formed by M. Léon Morel, of Rheims. The collection is said to be one of the most extensive and valuable of the kind in existence, the Gallo-Roman series and the series of stone and bronze prehistoric objects being probably

unequaled. The glass vessels are also very fine. Everything in the collection, from the Stone Age to the Merovingian period, was found in France. It is intended to exhibit the collection as a whole before it is incorporated in the general series belonging to the department of mediæval antiquities and ethnography.

A bequest of a collection of shells, containing between 3000 and 4000 species, and numbering 10,000 specimens, has been made by the late Mrs. MacIver to the Liverpool museum.

The collection of carboniferous fossils made by the late Dr. John Young, who for a long period was under-keeper of the Hunterian museum, has been presented to the city of Glasgow by Mr. James T. Tullis, and is temporarily laid out in the geological section of the People's palace. It is the most complete collection of Scottish carboniferous invertebrata that has ever been brought together, nearly all the genera and species given in the "Catalogue of western Scottish fossils," being represented, whilst many have been added since the publication of that work. Apart from its purely scientific importance the collection has also a historical value; as it contains a large number of type and figured specimens, the greater part of these being the shells figured and described by Davidson in his various monographs on the carboniferous brachiopoda. There are also a large number of type and figured specimens drawn and described by Brady, Jones, Kirkby and others.

The Middlesbrough Museum, which has hitherto been temporarily located in seven rooms of the Municipal Buildings, is promised a more fitting and permanent habitation by A. J. Dorman, Esq. This generous benefactor has offered to provide a new building, including accommodation for the natural history collection of Mr. Alfred Pease, M.P., recently brought from Abyssinia, Somaliland, &c., comprising 800 birds and other animals, bringing the number up to 1000 specimens, several species being new to science. A suitable site has been procured by Mr. Dorman, and his architect is proceeding with the preparation of the design.

A large whale was stranded on the coast and fell into the hands of a syndicate, who desired to have the skeleton articulated for exhibition. They applied to a naturalist to do the work, but negotiations fell through, and eventually the skeleton was mounted by someone else. After some months a member of the syndicate, meeting the naturalist, observed with great complacency, "Mr. ——— made us a very good skeleton indeed, and we had half a barrow-full of bones left over!"

Mr. I. Chalkley Gould has a few copies remaining of the reprint of his illustrated paper on "Early Defensive Earthworks," in which he urges upon curators the importance of obtaining and exhibiting plans of all the forts in their respective neighbourhoods. Mr. Gould will, while copies hold out, be pleased to send one to any curator addressing an application to him at the Royal Societies Club, St. James' Street, London.

ABROAD.

The 'Annual Report of the Directors' of the Carnegie museum for the year ending March 31, 1901, was issued a short time ago, as well as the report on the 'Prize Essay Contest.' From the report we learn of the rapid progress of the institution particularly in the field of vertebrate palæontology, the explorations conducted last year by Mr. J. B. Hatcher having resulted in the acquisition of nearly two hundred boxes of specimens, some of the more notable of which were described a short time ago in *Science*. As Mr. Hatcher again began field work in April the present year will doubtless see other important accessions of fossils. In zoology the announcement is made that the museum has acquired a specimen of the almost extinct *Rhinoceros simus*, only four other examples of which are in existence. It is also announced that the museum last year purchased the Ulke collection of coleoptera. Among other illustrations the report contains a fine view of a remarkable lot of 'cannon-ball' concretions in Laramie sandstone. It is announced that no less than eight hundred and forty three participated in the Prize Essay Contest, the subject being 'An Afternoon in the Carnegie Museum.' The successful essay is printed in full and the names and addresses of the other contestants are given.

The Annual Report of the President of the American Museum of Natural History for the year 1900 is also at hand. The most evident progress has been made in arranging the extensive anthropological collections of the museum and the new West Hall, devoted to the American Indian and Eskimo, was opened on November 1, 1900. No less than seven expeditions were sent out during the year to conduct ethnological and archæological researches, including one to Liberia and another to the vicinity of Lake Titicaca. This extended work was made possible through the liberality of friends of the museum. The department of vertebrate palæontology, which completed its first decade in May of this year, comprises in its collections eight thousand five hundred and thirty-four specimens of fossil mammals and about four thousand of reptiles. The most important accessions during 1900 were a complete skeleton of the herbivorous dinosaur *Thespesius*, and one of a carnivorous dinosaur, several partial skeletons of horses from Texas, and a skull of elephant. The attendance during the year was 523,522, an increase of a little more than 65,000 over the previous year. It is announced that the income from the endowment fund is now \$20,280, and while this is gratifying it is to be wished that it were ten times as great. For the first time in many years the report contains no illustrations, but this is more than compensated for by the publication of the *Museum Journal*, which chronicles the current progress of the institution.

The first complete skeleton of a dinosaur to be mounted in America is that of *Claosaurus annectens*, recently placed on exhibition in the museum of Yale University, New Haven. This species occupies in America much the same place as that held by *Iguanodon*

in the ancient fauna of Europe, and its remains are not uncommon in the cretaceous of the western United States. This specimen was not only remarkably complete, but the greater part of the bones were in their natural position, the animal having apparently perished in a quicksand. The skeleton is mounted in relief, the entire left side being exposed, as well as the greater portion of the skull and the limbs of the right side. It measures twenty-nine feet from nose to tail, and is a trifle over thirteen feet from the base on which it stands to the top of the head. It was intended that "this huge specimen, as now mounted, should convey to the observer the impression of the rapid rush of a mesozoic brute," and this intention has been skilfully carried out; in fact, the only criticism that might be made is that there is too much motion, and too rapid motion for so huge a creature. The work of mounting, which occupied about a year, was performed by Mr. Hugh Gibb, under the direction of Dr. C. E. Beecher.

If the Yale dinosaur is the first actual skeleton to be placed on exhibition in America, the reproduction of the skeleton of *Triceratops*, displayed in the Government Building at the exhibition now being held in Buffalo, New York, is also the first of its kind. Prof. F. W. Clarke, of the United States Geological Survey, has long desired to show the public an accurate reproduction of one of the great dinosaurs, and this has been made possible by the co-operation of the United States National Museum—the specimen being a joint exhibit. *Triceratops* was chosen, not only on account of its size and remarkable appearance, but because this genus is well represented in the collections of the United States National Museum. The sacrum and all the bones of the pelvis were present, an almost complete series of cervical and trunk vertebræ, all the large limb-bones and several, more or less complete, crania. Thus the chief portions lacking were a few vertebræ, many ribs, and most of the foot-bones, these last being strangely scarce; and it was possible to construct a good composite skeleton of *Triceratops prorsus*. Owing to variations in the size of the specimens and the distortion of the bones it was impossible to make casts of them, and the reproduction was made in papier mache on a framework of wood and iron. As completed, the animal was ten feet six inches high at the sacrales and twenty-five feet long, or four feet shorter than *Claosaurus*, although of twice its bulk. This is due to the fact that *Claosaurus* walked erect and there was an enormous tail to balance the head and body, while the tail of *Triceratops* is comparatively small, the animal walking on all fours and everything being subordinated to the enormous head. The skull measured five feet six inches from nose to back of frill, and was nearly five feet across this frill. The fore-legs are short enough to allow the animal to feed from the ground with ease, while the frill not only may have served for defence but counter-balanced the weight of the face and horns, so that the centre of gravity of the cranium was but little in advance of the occipital condyle. Accompanying this skeleton was a small model and a

painting, both by Mr. C. R. Knight, representing the animal as it is supposed to have looked in life. It may be said that all previous restorations show *Triceratops* as much too high at the fore-quarters and too lightly built; the entire structure of the animal, save the ribs, is very massive, and judging from the length of the ribs the belly must have reached well towards the ground. For such a creature to have "cavorted" through the jungle as recently depicted in a popular magazine was quite out of the question.

The collecting of fossil vertebrates is being carried on as energetically as ever in the United States, and various institutions have parties in the field this summer. The American Museum of Natural History leads with four parties, two seeking for dinosaurs in the jurassic of the Black Hills, western S. Dakota, and Central Wyoming, and two collecting mammals in the pliocene and upper miocene of Western Texas, and the same formations in Eastern Colorado. The United States National Museum has been collecting Belodonts and looking for the ancestral forms of Stegosaurus in the Texas of Arizona. The Field Columbian Museum is exploring the jurassic of Colorado, and the Carnegie Museum is re-working the celebrated deposits at Canon City, Colorado, where Prof. Marsh obtained many of his type specimens of dinosaurs. On the Pacific Coast the University of California and Stamford University have had good success in securing Belodonts, and Prof. Merriam will later work in the John Day Beds for the third season.

The Musée Carnavalet, Paris, which illustrates the history of that city in such a forcible and interesting manner has recently had five pictures presented to it, amongst them being a portrait by Lagneau, with the letters "François Rabelais," painted in the upper right hand corner.

The following Paris museums will shortly receive valuable additions to their treasure: to the Musée de Céramique Sèvres, will go beautiful pieces of porcelain, glass, crystal, and crockery; the Musée Galliera will be enriched with several objects of art representing the craftsmanship of the people of the Caucasus and of Russian Armenia, and with rare old lace, &c. The archæological section of the Louvre has already obtained possession of some fine pottery. These articles are the gift of Baron de Baye.

The geological excavations at Pikermi, near Athens, which have been carried out under the direction of Dr. A. Smith Woodward, of the British Museum, have brought to light an extensive series of pliocene fossils, many of which will be placed in the British Museum, while the remainder will find a home in the university of Athens. Among the principal finds recorded may be mentioned remains of a huge proboscidean, including two femurs each over a metre in length, a fine series of excellently preserved skulls and other bones of rhinoceros; *Mesopithecus*, an old-world monkey, remains of which are rarely met with in any part of the globe as fossils; several almost complete skulls of *Mastodon*; skulls, teeth, and bones of *Machærodus*, the great sabre-toothed tiger, remarkable

for the great development of the canine teeth, and also for its wide geographical distribution. Remains of this animal have been met with in England in Kent's Cavern, Torquay, in Cresswell Crag caves, Derbyshire, and in the Norfolk Forest-bed. Dr. Woodward also reports the discovery of innumerable bones of *Hipparion*, the three-toed and most immediate predecessor of the horse of the present day; hyæna and other carnivores, antelopes, giraffe with limb-bones very long and slender; *Helladotherium*, a short-necked giraffe allied to the okapi, the new ruminant mammal recently brought home by Sir Harry Johnston from the Semliki Forest in the Congo State; and *Samotherium*, a large ruminant, first discovered by Dr. Forsyth Major in the lower pliocene beds of the Island of Samos, off Asia Minor, and said to connect *Helladotherium* and the giraffe with some of the ancient aberrant antelopes of Pikermi. Traces of chelonians were abundant, and include, as one of the prizes of the explorations, remains of perhaps the largest tortoise ever found in Europe. Very few bones of rodents were met with, and birds do not seem to have been numerous; but a considerable collection of land shells was obtained. It is curious that no traces of plant life were observed.

Mr. Jacob L. Rogers, the locomotive builder, has left the bulk of his fortune, estimated at eight million dollars, to the Metropolitan Museum of Art at New York. Should the museum not be able to accept the legacy as an endowment fund, the money is to go to other New York institutions.

In an address to the Canadian Institute, published in its "Proceedings," 1900, the president, Mr. B. E. Walker, discussed the important question of "Canadian Surveys and Museums, and the need of increased expenditure thereon." As a hard-headed financier he should be listened to with attention when he expresses his "firm belief that the future of Canada depends, to a degree not generally recognised, upon our liberality in spending money to exploit our country." One mode of wise expenditure is through public museums, and of them Mr. Walker says:—"The Dominion Government at Ottawa and each province, at its city of chief importance, should have a museum belonging to and supported by the people. These museums should contain exhibits of the metallic and non-metallic minerals of the country, both those of economic and merely scientific value, the forest trees, with the bark preserved, in, say, six feet sections, cut also and partly polished, and each specimen accompanied by a small map showing its habitat; the fresh water and sea fishes, mounted after the modern methods; the fur-bearing animals, the game birds, and the birds of our forests, fields, and sea coast, many of them mounted so as to tell a child their habits at a glance; the reptiles, crustaceans, insects, plants, indeed as complete a record of the fauna and flora of the country as possible; the rocks of stratigraphic importance, and all the varieties of fossils which can be gathered in this country; the archæological and ethnological evidences of the races we have supplanted in Canada, and much

more that does not occur to me at the moment. I should not like to suggest a limit of expenditure on such museums. The necessity of a new building at Ottawa is admitted. The crime of leaving exposed to fire, in a wretched building never intended to protect anything of value, the precious results of over fifty years of collecting, has been pointed out in a recent official report. But the Government seem deaf to such claims. I can only repeat that we are rich enough to bear the cost with ease, but we are not intelligent enough to see our own interest in spending the money."

We understand that the Canadian Government has at last undertaken to erect the much-needed new buildings at Ottawa; but Mr. Walker's remarks remain none the less worthy of consideration, as stating an ideal that should be kept before the minds of all who have any connection with the new scheme. Mr. Walker has not mentioned (we hope only because the fact is now so fully recognised) that the better and bigger the building the more need will there be for an adequate supply of curators. At present the Ottawa museum (like most similar government institutions within the limits of the empire) is miserably understaffed. Mr. D. Ewart, the chief architect of the Canadian Government has been visiting England and the continent of Europe preparatory to drawing plans for the new building.

Apropos of the museum of the Geological survey at Ottawa, we may note that it has recently been adorned by a replica of an excellent portrait of the naturalist Elkanah Billings, to whom so much of our knowledge of Canadian palæontology is due. A reproduction of the portrait is given in the "Ottawa Naturalist" for February, 1901.

FRANK SUTER & Co., Ltd.,

. . . Electrical Engineers, . . .

**Designers and Manufacturers of Electric
Light Fittings.**

SPECIALITY :

Picture and Museum Case Lighting . . .

. . . By Suter's Registered Reflectors.

FRANK SUTER & CO., Ltd.,

66, BERNERS STREET,

. . . LONDON, W.

Marine Biological Association of the United Kingdom

Specimens of **MARINE ANIMALS** and **PLANTS** specially preserved for
Museum purposes. For detailed Lists and Prices apply to

THE DIRECTOR, BIOLOGICAL LABORATORY, PLYMOUTH.

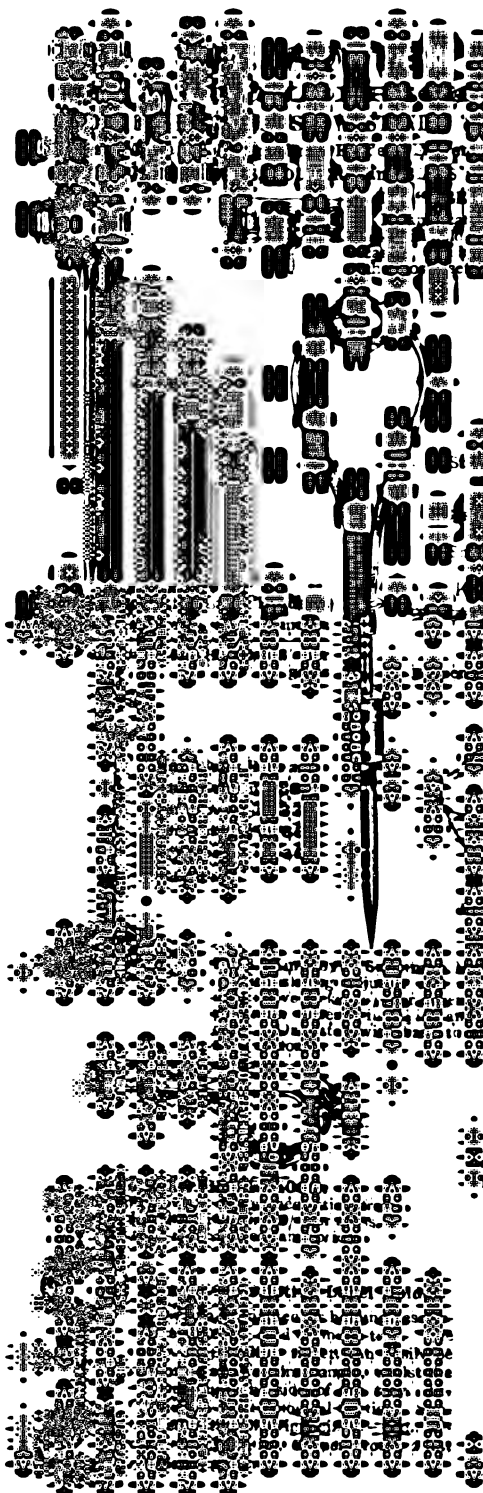
A. S. HUTCHINSON, —

Naturalist, Furrier and Taxidermist to . . .

Manchester, Sheffield, Derby and Oldham Museums.

Undertakes all kinds of plain and artistic taxidermy. British Birds and Animals
supplied at the usual prices. Private and public Museum Collections attended to
and kept in good condition at a reasonable cost per annum. Work executed in any
part of the kingdom.

A. S. HUTCHINSON, 85, London Road, DERBY.

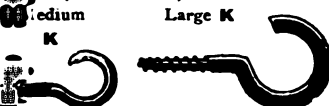


SONS, Ltd., ESTAB.
1846.
LONDON, E.C.
Museums or Private Collections.
Supplies to the British Museum, &c.
of any description made to order.

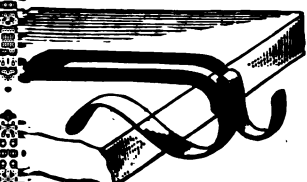
Patented. 3/6 per gross.
It has a sharp needle point.
set in any position in trays or
stands, &c. Altogether one of
the most useful and very cheap.



N.A.—12/- per gross.
Exhibiting specimens from edges of glass
or wood shelves.
Hooks for Cases, &c.
Guaranteed truly tapped, bronzed
(non-corrosive).



Medium K 10/- gross.
Large K 10/- gross.



STEEL SHELF HOOK.
Specimens from $\frac{1}{2}$ or $\frac{3}{8}$ inch shelf.
9/- per Gross.
1 inch shelves at same price.



1008. Price. 8/- per gross.
Exhibiting descriptive labels. Having two spikes
completely rigid when once pressed into
the surface. Sample will be sent Free on application.

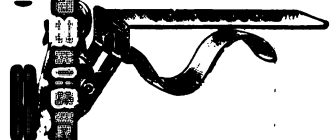


Aldersgate Stand (Patented)
Exhibiting descriptive cards at any angle.
2 in. by $\frac{1}{2}$ in. .. 10/- per gross.
3 in. by $\frac{1}{2}$ in. .. 24/-

Ltd., ESTAB. 1846.

LONDON, E.C.

dries to the British Museum,
Museum, Horniman Museum,
and
Illustrations, and Samples, on



No. BT3.

"Simplex" Shelf Clip.

holding specimens from $\frac{1}{2}$ or $\frac{3}{4}$ in.
Specially useful for long narrow
labels.

per doz.; 18/- per Gross.



Glass-Topped Specimen Boxes.

white paper inside and black out-
side used at the Geological Museum,

Depth.	
by $\frac{1}{2}$ in.	18/- per gross.
by 1 in.	21/- "
by $1\frac{1}{2}$ in.	24/- "
by 2 in.	27/- "
by $2\frac{1}{2}$ in.	31/- "
by 3 in.	36/- "
by 4 in.	47/- "
sorted equally	27/- "

measurements are quoted
Any other size,
to order.

to make in the following sizes covered

in.	24/- per doz.
in.	30/- "
in.	36/- "
in.	42/- "
in.	48/- "
in.	60/- "
in.	72/- "



**Best Cardboard Tray for
Specimens.**

width, and finish as boxes No. 14,
but are $\frac{1}{2}$ in. high.

2	3	4	5	6
6/-	7/6	9/-	10/6	per gross

Larger sizes to order.

Board for Mounting or Writing.

Per doz.

24 by 19, 6-sheet cardboard,	2/3
24 by 19, 8-sheet cardboard,	2/6
24 by 19, 12-sheet cardboard,	3/-
24 by 19, stout tinted board,	3/6
24 by 19, thick,	4/6
24 by 19, medium,	4/-
24 by 19, thin,	3/6

above sizes at half the prices.

S., Ltd., ESTAB.
1846.
LONDON, E.C.
Wholesale or Private Collections.

BRACKETS, ES.



Bracket J.

Standard Bars
Quality and Finish.

are stocked:—

BRONZED.

10	12 inch.
2/3	2/9 each.
21	21 inch.
3/6	3/6 each.

IRON (Warranted).

10	12 inch.
1/6	1/9 each.
21	21 inch.
3/4	4/6 5/6 each.

CASES.

earn-stly solicited to
for many purposes.
nulsory. We quote
AL VALUE. Packing
tion, carriage paid.

L TAPPED BAR; Brass, Bronzed, 1/- per foot.

not less than 4 feet.

Doors

VALUE, gin. high

Meable Trays.

35/-	per foot.
30/-	"
25/-	"
22/6	"



Useful Cabinet for private
ators or Duplicate Specimens.
ood covered cloth, brass handles.
by 12 by 8 (4 drawers) 16/6
by 15 by 20 (5 drawers) 21/-
by 18 by 12 (6 drawers) 25/-
by 20 by 16 (8 drawers) 30/-

Ltd., ESTD.
1846.
LONDON, E.C.
for Private Collections.

DIMENSIONS.

Total height, 6ft. 3in. (excluding ornamental iron cresting and finials).

Table Height, 2ft. 9in.; depth, 4ft. 6in.

Total height of Show Case (excluding cresting), 3ft. 6in.

Height of upper part of Show Case, 2ft. 13in.

Depth of upper part of Show Cases, 14 in.

The lower portion of Show Case measures at its highest 15in., and at its lowest 9 in.

Bottom of Case is covered with Claret or Blue coloured Cloth. The under part of table is fitted with Drawers, three in height and length, according to dimensions of Case. All Sashes are made on the "air-tight" principle and Glazed Plate Glass.

7ft. by 4ft. 6in. by 6ft. 3in., 18 Drawers, **£66 10/-**

9ft. by 4ft. 6in. by 6ft. 3in., 24 Drawers, **£78 10/-**

12ft. by 4ft. 6in. by 6ft. 3in., 30 Drawers, **£95**

If delivered outside London, an extra charge is made for packing, according to size, varying from £3 upwards.



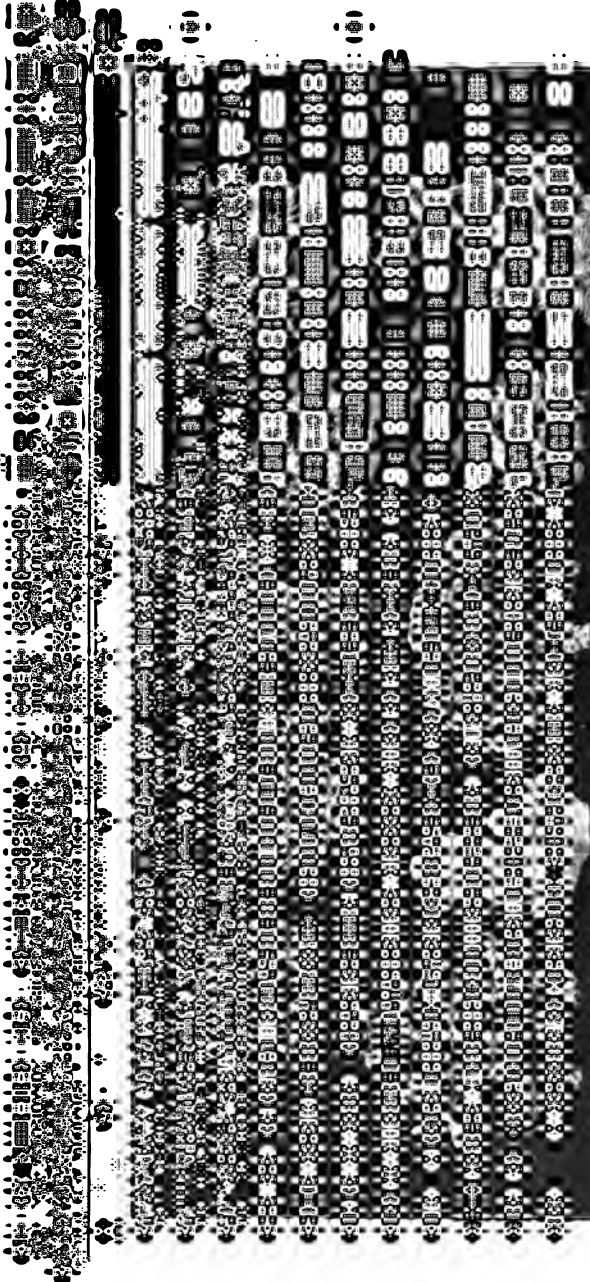
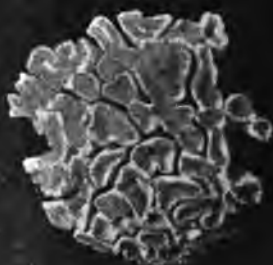
Gany Plate-Glass Case.

All round and top, carved pedestal with one full-sized plate-glass bars and brackets. Splendid room.

B Quality,
Both, A Quality, without pedestal or inside fittings.

£15 5 0	29 17 6
18 10 0	12 15 0
21 15 0	15 10 0
25 0 0	18 10 0

above, 37/6, 57/6 & 72/6 extra, made for all purposes—any plates and drawings supplied application.



The Collection of Corals now on loan to the Camberwell Town Council, and exhibited at the South London Art Gallery, Peckham Road, is comprised in Six large Glazed Cases.

- A. A Mahogany Table Case, 14 ft. 6 in. long, 5 ft. wide, with sloping Top each side. This contains smaller typical Specimens of the various Families and Genera both Alcyonarians and Madreporarians ; also Hydrocorallines. These are illustrated by a number of explanatory Labels and printed descriptions with plates.
- B. A Wall Case, 6 ft. wide, 9 ft. high, containing fine Specimens of Alcyonarians in brilliant colours and striking forms.
- C. A Wall Case, 12 ft. high, the upper part also filled with Alcyonarians and Zoophytes with the Coral preserved in spirits. In the lower compartment are fine Specimens of Millepora, Isidinae, &c., whilst a central part contains Pink Stylaster, Distichopora, and some novel Specimens of Glass Sponges.
- D. A Wall Case containing a fine display of Madrepora, including very beautiful Specimens.
- E. A similar Case with Fungia, Mycedium, Lophoseris, Pocillopora and Merulina. Also fine Dendrophyllia, &c.
- F. A fine Large Case, 15 ft. 6 in. wide, with a Collection of rare Montiporinae, a large Galaxea, many Astreidae, and large Specimens of Gorgonias, &c.

The Collection comprises about 800 Specimens, the greater number mounted on blocks and labelled.

The whole, with the well-made Cases, is offered for Sale.

For terms apply to :—

Mr. MORGAN,

c/o W. B. Dalton, Esq.

South London Art Gallery,

Peckham Road, Camberwell.

W. D. WEBSTER,

Home Court, 24, Palace Road, Streatham Hill,
.. LONDON. ..

COLLECTOR OF ETHNOGRAPHICAL SPECIMENS,
EUROPEAN AND EASTERN ARMS AND ARMOUR,
PREHISTORIC AND OTHER ANTIQUITIES.

Telegraphic Address: "ETHNICALLY, LONDON."

ILLUSTRATED CATALOGUE published every three months. Each copy contains 20 plates reproduced from photographs, and is subscribed to by all the principal Museums in the world. Subscription 10/- per year, post free, payable in advance.

A few bound Catalogues can still be obtained at the following prices:—

Vol. 1 contains Catalogues	Nos. 1 to 10	- -	30/-
Vol. 2	ditto	Nos. 11 to 17	- - 20/-
Vol. 3	ditto	Nos. 18 to 23	- - 25/-
Vol. 4	ditto	Nos. 24 to 27	- - 25/-

The Collection consists of over 10,000 specimens from all parts of the world, any of which will be sent on approval on carriage being paid.

SPECIMENS BOUGHT OR EXCHANGED.

Photographs of

Familiar Trees

Plants & Flowers

in their SUMMER and WINTER appearance, with enlarged views of their bark, leaves, flowers and fruit, showing details of structure and growth.

MAY BE SEEN at the British Museum; Royal Art Library, South Kensington; University College, London; University College, Liverpool; Museum of Science and Art, Edinburgh; &c., &c. Lists on application.

HENRY IRVING, The Rowans, BROMLEY, KENT.

MUSEUMS ASSOCIATION.

Some of the earlier volumes of the Report are nearly out of print, and Museums requiring complete sets should order them at once. Particulars can be obtained from the Secretary, Museum, Sheffield.

Museums Association.

EDINBURGH MEETING, 1901.

PRESIDENT.

SIR WILLIAM TURNER, K.C.B., D.Sc., D.C.L., LL.D., F.R.S.

ORDER OF PROCEEDINGS.

MONDAY, 8TH JULY, 1901.

- 2 TO 6 P.M. Reception Room open in the University.
5 P.M. Meeting of Executive Committee in the Museum of Science and Art.
8 P.M. Meeting of Council in the Museum of Science and Art.

TUESDAY, 9TH JULY.

- 10 A.M. TO 1 P.M. Address by the President, Sir William Turner, K.C.B., D.C.L., F.R.S.

Reading and discussion of the following Papers :—

- "How to Utilise Specialists," by H. M. Platnauer, B.Sc.
"The Smallest Museum," by Miss Kate M. Hall.
"Museum and Art Insurance," by John Maclauchlan.
"A Museum in Temporary Premises," by R. A. Budicom.

Some examples of Card Cataloguing, exhibited and explained by W. E. Hoyle, M.A.

- 1.30 P.M. Luncheon.
2.30 TO 5 P.M. Drive round the City of Edinburgh. Visits to the National Gallery, the National Portrait Gallery, National Museum of Antiquities.
4.30 P.M. Visit to the Museum of Science and Art, where visitors were entertained to tea by the Director and Mrs. Grant Ogilvie.

WEDNESDAY, 10TH JULY.

- 10 A.M. TO 1 P.M. Reading and discussion of the following Papers :—

- "Arrangement of Reprints and Abstracts of Scientific Papers in Museum Libraries," by E. M. Holmes, F.L.S.
"Suggestions for the Illustration of Astronomical Phenomena in Museums," by J. G. Goodchild.

"Some Improvements on the mode of Exhibiting Minerals," by J. G. Goodchild.

"Geological Collections," by J. G. Goodchild.

"The Museum Journal," by E. Howarth, F.Z.S.

A Museum Microscope, exhibited and described by F. Grant Ogilvie, M.A., B.Sc.

Luncheon, by kind invitation of the Lord Provost of Edinburgh. Afterwards visits were paid to the City Museum in the City Chambers, St. Giles' Cathedral, the Law Courts, the Outlook Tower, and the Public Library.

THURSDAY, 11th JULY.

10 A.M. TO 1 P.M. Reading and discussion of the following Papers :—

"An Economical Method of Mounting Small Shells, by W. H. Edwards.

"The Relation of Industrial Museums to Art," by Prof. G. Baldwin Brown, M.A.

Election of Officers. Business Meeting.

Visit to the Anatomical Museum at the University and to the Museum of the Royal College of Surgeons, on the invitation of Sir William Turner, K.C.B., and Dr. Dunsmure.

7.30 P.M. Association Dinner.

FRIDAY, 12th JULY.

Visit to Glasgow to inspect the New Art Galleries and the Exhibition. The Association was received and entertained by the Lord Provost and Museums and Galleries Committee of the Corporation of Glasgow.

The Council of the University of Edinburgh kindly granted the use of rooms for reception, reading of Papers, and other business of the Association.

The International Zoological Congress.

The Fifth International Zoological Congress, which has just concluded its sittings in Berlin, is an event which cannot be without interest to the museum world, for of those present quite a considerable number were either directly or indirectly connected with museum management ; and the inspection of several important collections formed part of the programme of the Congress. First one or two remarks on the Congress in general : the fact that the buildings of the Reichstags gebäude were placed at the disposal of the meeting is a standing testimony to the esteem in which pure science is held in Germany ; to realise how different matters are in this country one has only to try to imagine a similar association being invited to meet in the Houses of Parliament ! Museum workers, too, stand on a different level in Germany : no man has a chance of a good appointment unless he is a deeply read and cultured scientist, and no less than two members of the staff of the Museum für Naturkunde in Berlin are privy councillors.

The names of over 700 delegates and members, including about 120 ladies, were enrolled, and the meetings were sometimes general, sometimes in several separate sections. Few of the papers read bore special reference to museum work : Dr. R. Blasius, of Brunswick, discussed the arrangement of zoological museums, and Professor H. Landois, of Münster, showed how the Westphalian Zoological Garden and Provincial Museum was a centre for the investigation of local zoology. Other papers, however, were of no small interest to museum curators ; e.g. one by Professor Thilo (Riga) on mechanical devices in the animal body, illustrated by models ; another by Dr. H. M. Bernard (London) on nomenclature and evolution, in which he propounded a scheme for denoting variations of forms by letters or numbers to avoid the inconvenient multiplication of specific names.

In the sittings of the nomenclature section, proposals were made and a scheme submitted for securing uniformity in the position of illustrations and the letters used in referring to different parts of them. These are for the most part so obvious and reasonable that one would think they only need be mentioned to be at once accepted. The use of figures and diagrams is so rapidly increasing in our museums that it has appeared worth while to reprint these recommendations as an appendix to the present communication.

Turning now from the business of the Congress proper it is to be noted that the sojourn in Berlin and the subsequent visit to Hamburg provided an opportunity for inspecting two of the finest natural history museums in the world, and as they differ widely in their general scheme of arrangement, it may be worth while to devote a few paragraphs to giving an idea of their main features.

The Zoological museum in Berlin occupies the greater part of a large three-storied building called the "Museum für Naturkunde." The ground floor, which alone is accessible to the general public, contains the show collection, whilst the huge reserve stores, kept for scientific investigation, occupy the first and second storeys. This is an allotment of space which cannot be too strongly recommended to the attention of all those who are planning new museums. The space available for exhibition purposes includes, however, ten large rooms, an amount quite adequate for all reasonable requirements. Part of these rooms are lighted from above, part by windows at the sides. In some, the upright cases are disposed in parallel rows; in others there is a long double row of such cases down the centre of the room, whilst others join them at right angles at regular intervals, so as to form a series of bays. This arrangement is not satisfactory, as the centre cases face the windows and thus produce vivid reflections. The interior of the case is painted a dull, yellowish grey, a tint which, though it has the merit of contrasting well with most colours, is by no means pleasing in itself. A cardinal point in the arrangement of the specimens is, that so much space is allotted to each, that no part of any one is covered by another; and if curators in general were to see the striking effect produced by the observance of this simple rule, the number of examples shown in most of our museums would soon be much reduced.

Many transparent and semi-transparent objects are placed in glass jars just in front of the windows with very good effect. The labels attached to the specimens have coloured margins, the colour indicating in a general way the region of the globe which they inhabit, the different geological provinces having different tints allotted to them, in accordance with maps shown conspicuously on the walls. A liberal use is made of models, diagrams, and coloured charts.

The Director of this truly imperial museum, Geheimrath Professor Möbius, is assisted by a staff of 18 zoologists, almost without exception men of world-wide reputation, 5 preparators, 7 assistants, and 6 attendants in addition to a secretarial staff.

In contrast to the institution just described, the Natural History museum at Hamburg is lodged in a building, which contains a single hall of magnificent dimensions: at intervals above the floor are three broad galleries, connected by bridges, the centre being open to a glass roof. The general tone of colouring is subdued, some would say dingy. Although the general effect of the interior was compared by an irreverent person to a railway station, the whole impression is most imposing. The actual dimensions of the interior are about 250 by 100 feet, but perhaps the size is best realised by noting that there are two pedestals on the ground floor, one on either side of the entrance, each of which bears the skeleton of a full grown whale and yet there is ample space for the crowds that visit the museum every Sunday afternoon to walk round them. In general the plan of arrangement is as follows: the ground floor is devoted to mammalia, with the exception of a space at the further end which contains the mineralogical and palæontological collections: on a mezzanine floor (first gallery), are exhibited a general collection of birds, whilst on the edge of the gallery on either side is a long desk case, 180 feet in length: one of these contains insects, the other shells: on the first floor (second gallery), are the remainder of the zoological collections; whilst above, in the third gallery is an ethnographical collection. About half the space in each gallery is reserved for study collections not accessible to the public.

Among the special features of the museum must be mentioned, the collections illustrating the fauna of the lower Elbe district, the insects destructive to plants, life histories of the insects, and a series of preparations showing the marine fauna of different kinds of shore, such as the rocky coast of Heligoland, a Holstein oyster bed, and pelagic life at the surface and in the depths of the sea.

In conclusion a few words must be said about the new Städtisches Museum in the Prussian town of Altona, which borders on the free city of Hamburg. The authorities here have wisely determined to leave the formation of extensive scientific collections to their richer neighbour and have confined themselves to a popular representation of the life of the province. We have thus groups of birds, mounted in the style with which all visitors to our own Natural History museum are familiar, groups of insects similarly treated showing those which are found in the hedge-rows, on the heath, and beside the ponds. This idea is carried to excess in some directions, as when one sees stags pursued by eager wolves, mounted in what can only be described as "snap-shot" attitudes; the connection of

which, with the fauna of the district, is to say the least, remote. Still a little exaggeration of this kind apart, the general effect is good and is sure to be popular.

Specially interesting is the collection illustrating the human life and work of old Schleswig, exhibited in a manner which does the highest credit to the Director, Dr. Lehmann and his staff.

PROPOSALS, RELATIVE TO ILLUSTRATIONS, SUBMITTED BY THE COMMITTEE ON TERMINOLOGY. NOMINATED BY THE CONGRESS AT CAMBRIDGE, ENG.

I.—Position of illustrations :—

1. Bilateral animals should be represented as viewed from the left, with the ventral surface below : the same applies to sagittal sections.
2. Animals viewed from the front or the back should be represented with the ventral surface below : the same applies to transverse sections which should, further, be represented as viewed from behind.
3. Dorsal and ventral views should be represented with the head above; the same applies to frontal sections, which should, further, be shewn as seen from the dorsal surface.

II.—Arrangement of illustrations on plates :—

The illustrations should, so far as possible, be arranged seriatim in horizontal lines.

III.—References to details of illustrations :—

1. The parts of an illustration should be indicated by letters selected from their Greek or Latin names. In the explanation of illustrations these references should be arranged alphabetically according to their initial letters.
2. Only small (" lower case ") Roman letters should be used for such abbreviations.

IV.—Systematic name in legend :—

The systematic name should be given in the legend of the plate or text illustrations, and, where possible, in immediate relation with the figures themselves.

V.—Abbreviations of the designations of position and direction :—

anterior	ant.	longitudinal	long.
apical	apic.	medial, medius, etc.	med.
basal, basis etc.	bas.	posterior	post.
caudal	caud.	proximal	prox.
central	centr.	radial	rad.
cranial	cran.	rostral	rostr.
dextral	dextr.	sagittal	sag.
distal	dist.	sinistral	sin.
dorsal, dorsum, etc.	dors.	superior	sup.
externus, exterior	ext.	tangential	tang.
frontal	front.	terminal	term.
horizontal	horiz.	transversal	transv.
inferior	inf.	ventral	ventr.
internus, interior	int.	vertical	vert.
lateral	lat.		

To Utilize Specialists.

By H. M. PLATNAUER, B.Sc.

[Paper read at the Edinburgh Conference, 1901.]

At the Oxford meeting of this Association, Professor Flinders Petrie read a paper which attracted a good deal of attention. Dr. Petrie's plans are always worth consideration; they are not only carefully thought out, but are, as a rule, thoroughly practicable. The paper in question, daring as it was, was no exception to the rule. His scheme was to replace the specially educated curator of our provincial museums by a responsible caretaker. The scientific work of museums was to be done by a band of travelling specialists, arranged on rota, each of whom would visit the museums thus dealt with in succession. There is no need now to recapitulate the arguments urged against this scheme. Suffice it to say that the plan has been tried—not deliberately and methodically, but still effectually—and has been found wanting. Specialists have entered museums, and have siezed upon the greater portion of the available exhibition space for the display of specimens connected with their particular subject of research. Other specialists have followed, and have mutilated their predecessors' work in order to illustrate their own subjects. Finally, the museum has taken its tone from the last specialist that worked upon it. But all the sanity and proportion of arrangement that would have been imparted by a man of more general knowledge and wider sympathy, are lacking. Dr. Petrie has, nevertheless, put his finger on a pressing need in provincial museums. There are serious, even fatal, objections to his treatment of the problem: but the problem is one that calls for solution. Indeed, one of the chief objects that the founders of this Association set before themselves was to devise a means whereby the special knowledge of the few might be put at the disposal of the many. And this object remains as yet unattained. Various steps have been taken to try and secure the wished-for result. At Mr. Rudler's suggestion, a committee was formed to put specialists into communication with such curators as desired their services. Few curators, however, availed themselves of the opportunity thus afforded. At the London meeting, Mr. Sclater read a valuable paper on the classification of the mammalia; but no other specialist followed his example. I have twice published schemes of classi-

fication in our reports in the hope that their destructive criticism by specialists might lead to the enunciation of better devised systems. And my schemes remained unnoticed.

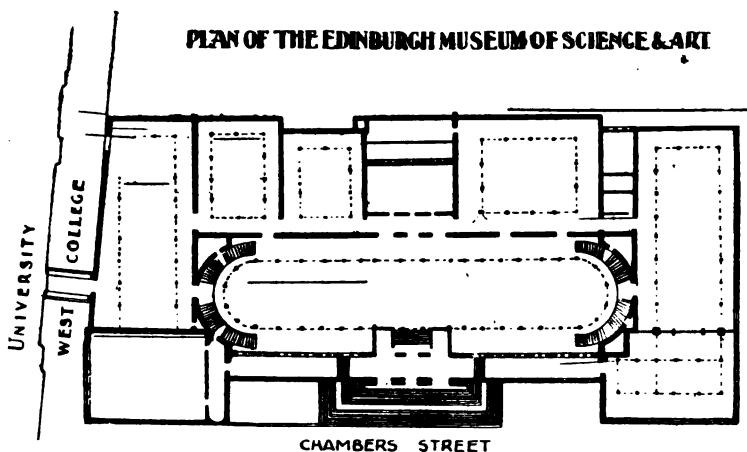
It seems to me that specialist and curator should work together, the latter interpreting the abstruse language of the former to the public by specimen and label. I will not now discuss the vexed question as to whether the curator should be a specialist or not. Personally, I think that there is much risk that absorption in one subject may result in lack of that intelligent and sympathetic interest in others, which is so necessary to one who has many departments under his charge. But even if every curator were a specialist, the problem would remain where it now is. No one can specialize in more than one or two branches, and our curator would still find that there were a number of subjects in which he needed to utilize a knowledge deeper than his own. I am not, of course, alluding to curators in metropolitan museums, or even in our larger provincial ones. In these each man has his own path clearly marked out. I am dealing with the average provincial curator, whose provinces have less scientific frontiers. How are they to benefit by the special knowledge of others?

My suggestion is simply that we take advantage of the Journal, which the Association is about to issue, for the regular publication of schemes of classification. Each number might contain at least one such scheme drawn up by someone of recognised authority on the subject dealt with. Some order should, if possible, be observed in the publication of these systems. Thus an early issue might contain a general scheme for the classification of the Animal Kingdom, with a list of appropriate specimens (with alternatives), for illustration. This might be followed by a scheme for the vertebrata treated in the same way; then the arthropoda, the mollusca, the worms, the echinoderms, the coelenterates and protozoa might be similarly dealt with. The classification would then descend to the classes composing these sub-kingdoms and ultimately to the orders constituting the classes. In the course of a few years, every curator would be in possession of a large amount of most useful information conveyed in a form in which it could be immediately applied. The sale of extra copies and of sets of labels drawn up in accordance with the schemes thus published would yield a small sum which might be handed over to the specialist in acknowledgment of his services. This scheme I leave for the consideration of our secretary and his fellow editors.

Mr. HOYLE pointed out that schemes of classification of all important groups already existed, and that the chief use of the specialist to the curator was in the naming of concrete specimens, and therefore different in each museum.

Mr. HOLMES agreed that the chief use of specialists was to help in naming specimens in museums, which the impossibility of any curator to know all subjects thoroughly rendered more or less necessary in all museums. He thought the arrangement of specimens in a museum was no part of the duty of a specialist. A suggestion made at a previous meeting that each museum visited by the Association should try to turn to account the special knowledge possessed by any members of the Association, was, he thought, one worth adoption.

Mr. BATHER considered that papers of the kind suggested by Mr. Platnauer should be practical and dealing with technique rather than with the scientific or artistic basis of the classification. They might direct the curator to suitable illustrations in original papers and monographs, to objects suitable for exhibition or for photographing, to models or replicas on sale, and to existing exhibitions capable of being copied. Such papers should not be spun out of the specialist's head, but should be based on concrete examples. Specialisation in one subject was of advantage to a curator, as to any other man, because it taught him his own ignorance, and helped him to appreciate the necessities of subjects not particularly his own.



Museum of Science and Art, Edinburgh.

THE Edinburgh Museum of Science and Art consists of an art and industrial division and a natural history division. It may thus almost be described as the South Kensington museums of Scotland. Until quite recently the Victoria and Albert and the Edinburgh museums were both under the control of the Department, which a couple of years ago lost its designation of "Science and Art," and became merged in the Board of Education. But in April of this year, the connexion between the Scotch museum and the English Board came to an end, and the former is now part of the Scotch Education Department. These changes, however, it is well to note, do not affect the long-standing arrangement with South Kensington, by which occasional loans from the Victoria and Albert museum are granted to museums and schools of art in Scotland.

It was while the nucleus of the present museum at South Kensington was being formed, that the idea of establishing a National museum in Edinburgh took shape. A site having been agreed on in 1854, £7,000 was granted for its purchase, and a special Act of Parliament was passed legalising the sale of the piece of ground on which the museum now stands. The Town Council and the University transferred to the Crown, under certain conditions as to access by the public, all their rights in the collections kept in the university museum. The museum being thus started, Dr. George Wilson, in 1855, was appointed its first director, with the Professor of natural history in the university as keeper of the natural history section.

The collections at this time, and for many years after, were exhibited in a temporary museum—for the most part an adaptation of nine dwelling-houses which formed the south side of Argyle Square, one of the old historic squares of the city. It was only after disappointing delays, mainly occasioned by the difficulty in obtaining the needful grants from Parliament, that on October 23, 1861, the foundation stone of the permanent building was laid by the Prince Consort—his last public act. Dr. George Wilson, however, did not live to see this beginning of the permanent home of the collections he had laboured so unceasingly to bring together. In 1860 his place was filled by the appointment of Mr. T. C. Archer, during whose directorate the first portion of the present building was opened in May, 1866, by H.R.H. the Duke of Edinburgh; and in January, 1875, a further extension was available for museum purposes. At his death in 1885, Mr. Archer was succeeded by Colonel, afterwards Major-General, Sir Robert Murdoch Smith, K.C.M.G. In 1888, when the west wing was completed, and the finished building allowed of the rearrangement and in some cases the reconstruction of the collections, which, till its completion, had been in a more or less unsettled condition, the work of bringing the museum into the form under which it now appears really commenced.

Sir Robert died in 1900, only a few days before the date of his retirement under the age limit, and he was succeeded by the present director, Mr. F. Grant Ogilvie.

The museum will be found to be very conveniently situated both for the general public and for students. In the very centre of the most crowded part of the city, it adjoins the university and stands immediately opposite the Heriot-Watt college, a public institution specially devoted to instruction in technology, science, and art.

The museum building roughly measures 395 feet in length by 190 feet in width, and consists of eleven halls and twelve galleries.

On entering the museum the visitor will find himself in the Great Hall, in which have been placed ancient, classical, mediæval, and renaissance sculptures, as applied to architecture; and models and casts of examples of external and internal decoration, both in relief and in colour, specimens of decorative ironwork, arms and armour, and in the corridor reproductions of carved ivories and other mediæval and renaissance works. In the N.E. Hall there is a collection of specimens of furniture and decorative woodwork dating from the fifteenth century. On this same floor are rooms

containing a collection of casts of architectural ornament arranged for the use of students. Care has been taken to identify the "Westminster" casts, of which there is a large collection, by means of photographs specially taken from the originals *in situ* several years ago.

A very beautiful collection of specimens of the various industrial arts is exhibited in the corridor and gallery on the first floor of the great hall, where are to be seen choice examples of pottery and porcelain, majolica, glass, metal-work in gold, silver, pewter, &c.; carvings in ivory, wood, and marble; watches, enamels—champlevé, cloisonné, and various examples of the school of Limoges in the sixteenth and seventeenth centuries; bookbindings, embroideries, and lace. On the same floor in the N.E. Hall are placed the Chinese and Japanese collections, as well as some specimens of the ancient Egyptian arts, while in the N.W. Hall may be seen the very fine Persian and Indian collections.

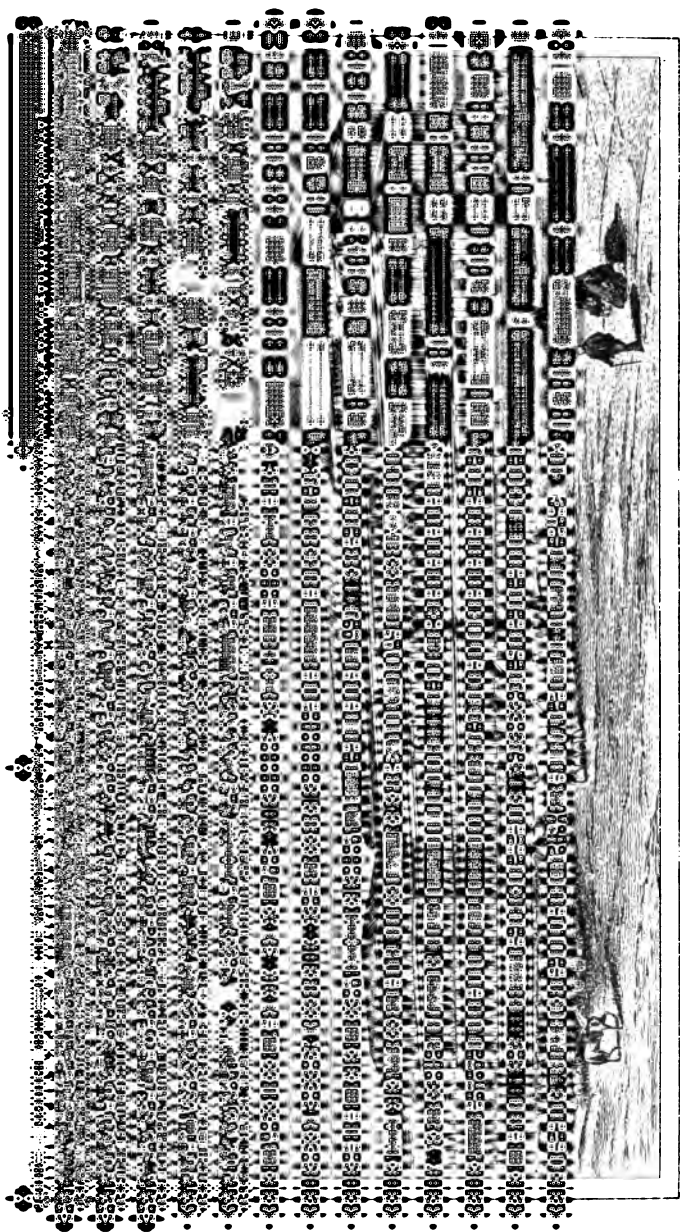
The ethnographical collection is exhibited in the West Hall and gallery of the first floor. It is arranged for the most part geographically, and includes objects from Africa, the Arctic regions, North and South America, Oceania, Siam, Burmah, &c. In this hall there are some interesting bronzes and other objects from Benin, but the main part of the collection here is representative of the arts of India and of Persia.

The technological collections will be found to be divided into the following sections, viz.:—The mineral, animal and vegetable, chemical products and manufactures, and economic botany.

The mining and metallurgical models, with illustrations of the metallurgy of iron, lead, copper, &c., and also building stones, marbles, and various examples of tiles, are to be found on the main floor in the S.W. Hall. In the gallery immediately above are exhibited the collections of animal and vegetable products, showing illustrations of flax, hemp, cotton, jute, and other textile manufactures, with objects connected with various other industries.

Exceedingly interesting models of chemical works—as, for example, the sulphuric acid works, apparatus for distillation, &c.,—occupy the S.W. Hall of the second floor; but this hall is for a few months filled with an important loan collection.

With respect to the economic botany, it may be noted that 15,000 specimens have been arranged under their natural orders to show the sources and the practical applications of the products of the vegetable kingdom.



Designed by Captain Roberts R.

EDINBURGH MUSEUM OF SCIENCE & ART



In the materia medica collection the plant or a picture of it is placed alongside the pharmaceutical preparations derived from it.

A very good collection of engineering models is in the west hall, on the ground floor where may be seen illustrations of civil engineering, including lighthouses, bridges, arches, breakwaters, canal models, &c. In the mechanical engineering section are models of machinery and apparatus, the majority of which have been made in the museum workshop. Models of ships and marine engines, together with guns, complete this section.

The natural history collections are arranged in the eastern portion, in three halls leading from the great hall, and in the two galleries above. In two of the halls on the main floor are placed the mammalia, and in an adjacent hall British zoology is illustrated. In the galleries upon the first floor are the birds and the sections comprising the crustacea, arachnida, brachiopoda, together with corals, shells, &c.

In the galleries of the second floor are the collection of reptiles and fishes, recent and fossil; the type or educational zoological collections; and the general collection of minerals. A special collection of the rocks of Scotland formed by the Geological Survey, as also the "Heddle Dudgeon" collection of the minerals of Scotland, will be found in the upper gallery and hall at the west end of the building. A guide has been issued to the latter collections, and contains a considerable amount of explanatory matter in connection with Dr. Heddle's investigations.

Officials of museums will especially note the cases, which, for the most part, are rendered as nearly dust-proof as possible. Instead of merely depending on the locks, there is a system of gun-metal screws all round the doors, on the side of the hinges, and at the top and bottom, as well as on the lock side, by which the doors are screwed up against velvet, so that it is impossible for them to warp, and they are thus kept tightly closed.

The library on the main floor contains over 12,000 volumes of works on science and art, as also the specifications of all British patents, and other publications in connection therewith; also French and United States patents.

The museum is open free to the public, every week-day, 10 a.m. to 4 p.m.; Wednesdays, 10 a.m. to 4 p.m., and 6 p.m. to 10 p.m.; and on Saturday from 10 a.m. to 10 p.m.

This year the Secretary for Scotland authorised the opening of the museum on Sunday afternoon, free to the public, an innovation that gave rise to much controversy in Edinburgh.

The average annual attendance is nearly 350,000, with an average daily attendance on free days of close upon 2,000, showing how much this central museum is appreciated both by students and by the general public.

Force of example appears to be exerting itself in Scotland, in a direction that is somewhat foreign to the people of that country, judging from the following resolution that was brought forward at a recent meeting of the Glasgow Town Council :—" That, having regard to the fact that by order of the Secretary for Scotland the museum of science and art in Edinburgh is now open to the public on Sundays, it be remitted to a special committee to consider and report as to the desirability of opening on Sundays to the public all or any of the museums, art galleries, and libraries in Glasgow under the management of the corporation, on the understanding that the working hours of the staff employed thereat be so arranged that the working week of no employée shall exceed sixty hours."

The Museums of New York State.

Ueber Museen des Ostens der Vereinigten Staaten von Nord Amerika.
Reisestudien von Dr. A. B. Meyer. I Der Staat New York. Abhandl.
d. k. Zool. und Anthropol.-Ethnogr. Museums zu Dresden, IX,
Nr. 1. viii + 72 pp. with 45 text figures, 1900.

IN 1899 Dr. Meyer visited the museums and other institutions of learning in the Eastern United States, and the present memoir forms the first part of an elaborate report on them from the point of view of the museum-director.

However far it may have diverged from the ideals of its founders, the American Republic has loyally obeyed the memorable bidding of Washington: "Promote as an object of primary importance institutions for the increase and diffusion of knowledge," and no man doubts that to this, above all things, it owes its present high position among the nations. The institutions of this kind are universities, libraries, and museums, each assuming the double task of instruction and research, the first through persons, the second through books, the third through material objects; but each borrowing, as occasion demands, the methods of the other two. We museum-curators, in this country at any rate, have long recognised that we have much to learn from America, and now Dr. Meyer brings the same fact home to the Germans; but, in his opinion, the libraries of the United States are in advance of the museums; while we may add that, on Dr. Meyer's showing, the universities are in some respects ahead of the libraries. So striking are the results already obtained, so rapid is the onrush, that, as Dr. Meyer forcibly insists, "We must, each in his place, put forth all our strength if we are not to be left behind." It is then the duty of each of us to realise that he has much to learn from kindred institutions elsewhere, and to learn it either by following Dr. Meyer's example, or by diligent perusal of the reports made by him and other competent observers.

The features in which American institutions of public research and instruction appear more advanced than those of Europe are the seriousness with which those who conduct them regard their duties, and the practical, prompt bending of material forces to their service. The former quality is well illustrated by the library-schools (seven in number) at one or other of which any candidate for a librarianship is expected to have received instruction. The course of the school

in connection with the New York State Library lasts two years, and in connection with it there is a library-museum in which all manner of objects connected with library technique are systematically arranged. This museum would doubtless be well worth a visit by museum curators; but there ought to be in connection with some great museum in this country a similar collection illustrating museum technique. Such a museum exemplifies the second characteristic of our American colleagues; but a more striking illustration is the power-house, which forms as integral a part of the modern American university as does the lecture hall.

While admiring these excellent qualities we need not despair of ourselves. We may remember that many of the wonderful drawings in Dr. Meyer's report represent structures that are planned but not yet completed. We may also note that the American Museum of Natural History has to worry along with only thirteen curators and assistants, who form, as Dr. Meyer says, "far too small a scientific staff for so great a museum. The masses of material continually streaming in from expeditions, gifts, and purchases cannot be dealt with either administratively or scientifically. The officials are overburdened, an evil state of things that obtains in many American museums with whose outward magnificence neither the number nor the position of the scientific men there employed at all corresponds." These remarks apply to London quite as well as to New York, and we should all be grateful for criticism of this nature if only it would open the eyes of the public. To judge, however, from the frequent mention of generous donations to State-supported institutions, the American does not consider that endowment of a museum from the public funds is any reason for not aiding its development by private subscription. But the difficulty often lies in the application rather than the acquisition of funds.

The present memoir discusses the American Museum of Natural History, the Museum of the Brooklyn Institute of Arts and Sciences, the Metropolitan Museum of Art, the New York Public Library, Columbia University, the University of the State of New York with its Museum and Library at Albany, the Buffalo Public Library, and the Museum of the Society of Natural Sciences at Buffalo. Any abstract of this highly condensed and yet most detailed account would be impossible. We shall, therefore, select a few points of immediate practical value to curators.

The absence of that mural decoration, from which so many European museums suffer, is favourably commented on more than once. But it is noted that attention may also be distracted from the object by over-elaboration of accessories, especially in groups of stuffed vertebrates.

The mounting of lepidoptera for exhibition, each on a tablet of plaster adapted to its form, is commended. Such preparations are made by Denton Brothers, Wellesley, Mass.

A moderate amount of change in the exhibited series arouses interest and betokens life. Thus in the local bird collection of the American Museum of Natural History, the migratory birds are changed according to the season, and thus observation of nature is incited.

The Metropolitan Museum of Art in New York displays albums of photographs in a table-case in the front of which is a sliding door through which the visitor can insert a hand and turn over the pages.

The extraordinary diversity of exhibition methods, backgrounds, labels and the like, to be seen in the New York museums is not regarded favourably by Dr. Meyer, who ascribes it to the absence of a centralised expert administration. It is, however, a good thing that there should be some museum where experiments can be made for use, and where the enthusiasm of the curator is not confined by too much red tape. As the late Sir William Flower once said to the writer: "We must keep on trying one method after the other, until we find out by experience which are really the best."

A main object of Dr. Meyer's tour was to investigate means of protection against fire, and he seems to have been impressed chiefly by the iron furniture with its marvellous finish, manufactured by the Art Metal Co., Jamestown, N.Y., B. Snead & Co., of Louisville, Ky., and J. B. & J. M. Cornell, 26th Street, New York. We are far behind America in these matters, and yet even there the museums do not use iron show-case frames to the extent that Dr. Meyer has long advocated.

Neither do museums as yet use the show-cases made of plate-glass, screwed together without a frame-work except at the back. Such are made by F. Pollard, 33, Bethune Street, New York, and The Crystal Show Case & Mirror Co.

A point that is scarcely enough attended to by architects of museums, is their orientation with reference to sunlight. What is

good for a dwelling-house is bad for a museum, where the entry of direct sunshine must be avoided as much as possible. The architect allows himself to be governed by the lie of the main street, although a slight turning of the façade might make the difference between harmful and appropriate lighting, and could easily be masked by the planning of a garden. The secret of museum architecture is to build from within outwards, rigorously adapting the outer form and ornament to the inner plan and contents. Indeed if this principle were followed in all buildings, nobody would complain except the architects.

But, since most museums are badly lit, we are grateful to Dr. Meyer for directing us to the Luxfer Prism Company, which now has a head office in London, with branches in other cities. This company supplies prismatic glass arranged in various forms for the purpose of directing light into any part of a room where it may be needed. The apparatus is very suitable for rooms with dark corners, basements and apartments from which direct light is blocked by opposite buildings.

It is almost unnecessary to observe that in the United States all museums of any importance are provided with lifts ("elevators" they call them); some day those in authority in the United Kingdom will understand that they are cheaper than stairs.

The activities of the leading American museums are more varied than is the case with most of those in Europe. Instead of buying from dealers ill-assorted collections insufficiently supplied with the needful data, they send out expeditions to collect specimens on the spot. In 1899 the American Museum of Natural History had thirteen such expeditions in the field. The same museum well exemplifies public instruction by means of lectures, since during 1899 there were 66,000 attendances at lectures, 13,500 being attendances by teachers, for whom a special course of lectures is endowed by the State. This museum has recently built a lecture theatre to seat 1,500 people. Besides the lectures, the museum is used for the evening meetings and exhibitions of scientific societies. The Manchester museum is, perhaps, the most active of our museums in this field; but, so far as the data given in its recent reports allow one to judge, the total number of lecture attendances, per annum cannot reach 5,000.* Then the American Museum of Natural History, like most other museums of the United States, issues an important array of publications, namely: Annual Reports

* 2808 is the exact number given in the Report for 1900-1901, just received

in 8vo. (that for 1899 has 96 p.p. and 11 plates), Bulletins in 8vo., Memoirs in large 4to., Illustrated Guides, and an illustrated monthly, "The American Museum Journal."

But, perhaps, the most pleasing feature commented on by Dr. Meyer, and by no means peculiar to the institutions visited by him, is the attention paid by Americans to children. Thus at the Brooklyn Institute is a special Children's museum embracing all human interests so far as intelligible to youth, or of educational value. The objects, which have as a rule some relation to home or school life, are displayed in six prettily decorated rooms, in cases not too high for children to see all their contents. There is a so-called type-collection of thirty-five minerals, twenty plants, thirteen fossils, three worms, three echinoderms, two crustaceans, ninety insects, ten molluscs, two fish, three reptiles, three birds, and two mammals. As an example of the exhibits may be mentioned a pictorial representation of the leather industry, with a piece of skin and the various tanning and dyeing substances, as well as the bristles and the manufacture of brushes. Or, again, on the map of France the wine districts are indicated by tiny wine bottles, the coal districts by bits of coal, the extent of navigation by tin ships, that of glass-making by bits of glass, and so on. Nine hundred pictures and charts are hung in rotation. Attached is a lecture-room in which school teachers can lecture to their pupils on the material in the museum. Of similar nature is the section of the Buffalo Public Library devoted to children under fourteen. The value of this may be estimated from the fact that in this city of 350,000 inhabitants, during a single year, no less than 115,000 volumes were borrowed from this section, the number borrowed from the rest of the library being 888,000. A charming view of a corner of this Children's library concludes the memoir.

The authorities of the Dresden museum are to be congratulated on their publication of a work of such utility to all connected with education and research. We hope it will not be long before the second instalment of Dr. Meyer's report is in our hands.

F. A. BATHER.

Some American Labels.

The following labels have been forwarded by Mr. F. A. Lucas, of the United States national museum. The one referring to mammoths is in plain block type, of great primer size. The body of the label on silicates is in pica Roman type, and the headings in pica antique. The Hoatzin is in long primer type, and the other labels in pica. In his covering note, Mr. Lucas says that the label on silicates is a group label used in the series illustrating descriptive mineralogy. These group labels are all of the same width, but vary in height according to the amount of descriptive matter. The width, without margins, is six inches.

S I L I C A T E S .

Zoisite,	}	$\text{Ca}_2\text{Al}_2(\text{AlOH})(\text{SiO}_4)_3$	{	Orthorhombic.
Thulite.				
Saussurite.				
Klinozoisite.				
Epidote,	}	$\text{Ca}_2(\text{Al}, \text{Fe})_2[(\text{Al}, \text{Fe})\text{OH}](\text{SiO}_4)_3$	{	Monoclinic.
Withamite.				Monoclinic.
Hancockite.				
Piedmontite,	}	$\text{Ca}_2(\text{Al}, \text{Mn})_2(\text{AlOH})(\text{SiO}_4)_3$	{	Monoclinic.
Allanite,				Monoclinic.
		$(\text{Ca}, \text{Fe})_2(\text{Al}, \text{Ce}, \text{Fe})_2(\text{AlOH})(\text{SiO}_4)_3$		

Zoisite.—Silicate of calcium and aluminum, occurring in striated prisms and massive, chiefly in the crystalline schists. Thulite is the rose-red variety. Saussurite is a tough compact substance, approaching zoisite in composition and consisting generally of an intimate mixture of zoisite and a plagioclase feldspar. Klinozoisite is the name given those crystals like epidote in habit but near zoisite in composition.

Epidote.—Silicate of calcium, aluminum, and iron, with a varying ratio of aluminum to iron. It occurs in green, greenish-brown, or black prisms and masses in quartzose and crystalline rocks, and altered sandstones. Epidote is associated with the amphiboles, garnet, apatite, magnetite, etc. Withamite is the carmine-red to straw-yellow variety. Hancockite is a lead and zinc epidote occurring in small lath-shaped crystals and crystal aggregates at Franklin, New Jersey.

Piedmontite.—Silicate of calcium, aluminum, and manganese, occurring massive and crystallized in the crystalline schists.

Allanite.—Silicate of calcium, aluminum, iron, and the cerium metals. It occurs in embedded masses and in crystals, chiefly in the coarser granitic rocks, granular limestones, rhyolites, etc. Allanite varies widely in external appearance and composition. The varieties depending chiefly on form are orthite, bucklandite, uralorthite, and bagrationite. The varieties depending chiefly on composition are wasite, bodenite, and muromontite.

MAMMOTHS.

The term Mammoth is popularly given to several extinct species of true elephants, but more particularly to *Elephas primigenius*, a species clothed in coarse hair with an undercoat of wool, found during the Pleistocene period in Northern Europe, Asia, and America: in Europe it was contemporary with early man.

Remains of this northern mammoth are abundant in Alaska and common throughout the northern United States. South of New York and Ohio this species is replaced by a larger form, *Elephas columbi*.

Tusks of the Mammoth are so plentiful in northern Siberia, and so well preserved, that for three hundred years or more they have been regularly collected and sold for ivory. Several more or less complete animals have been found imbedded in the ice or frozen soil.

MODIFICATIONS OF SKELETON FOR LOCOMOTION.

SKELETON OF MOLE (*SCALOPO AQUATICUS*),

ADAPTED FOR DIGGING.

The fore limbs are short and strong, the collar bones, or clavicles, which brace the legs apart being the most massive among mammals. The feet, which form two scoops, are set on edge and can not be turned down flat. The hind legs are weak and slender, so as to have room for movement in the burrow excavated by the fore legs.

MODIFICATIONS OF SKELETON FOR LOCOMOTION.

SKELETON OF BAT (*MOLOSSUS RUFUS*),

ADAPTED FOR FLIGHT.

All the bones of the fore limb, and especially the fingers, are greatly elongated, forming a frame for the support of the thin membrane which forms the wing. The point of support is the collar bone, while the breast bone, or sternum, is keel-shaped to furnish attachment for the muscles which move the wing. The hind legs are long, but slender, their use being to aid in extending the wing and to support the body when at rest. Bats hang head downward, and the toes are nearly equal in length, and curved, forming a series of hooks.

MODIFICATIONS OF SKELETON FOR LOCOMOTION.

SKELETON OF FLYING LIZARD (*DRACO VOLANS*),

ADAPTED FOR SAILING.

The flying lizard, or flying dragon, sails for short distances sustained by a membrane along the sides. This membrane is supported by very long ribs which are directed backward when the animal is at rest, or running, but are pulled forward so as to stand at right angles to the body when the membrane is extended for sailing.

HOATZIN.*OPISTHOCOMUS CRISTATUS* GMELIN.

BERBICE, DEMERARA.

18,518.

Gift of DEMERARA MUSEUM.

The most striking feature of the skeleton, and one peculiar to the Hoatzin, is the shape of the breast-bone, the keel being cut away in front where it is usually deepest.

The food of the Hoatzin consists mainly of leaves of the arum, and as large quantities of leaves are eaten, a large crop is required for their reception, and this crop completely fills the space below the sternum where the keel is lacking.

The lower end of the furcula (wish-bone) is united with the sternum, and its upper ends with the coracoids—the bones to which the wings are articulated.

The Hoatzin is the sole member of the order *Opisthocomi*, and is probably the representative of a once more numerous group of birds of generalized structure.

If a museum is itself to publish papers on its contents, apart from the final and elaborate catalogues, then no better model can be chosen than that of the "Annals of the South African Museum," edited by the director, Mr. W. L. Sclater, and admirably printed and produced by West, Newman, and Co. The praiseworthy feature is that each paper is separately issued as soon as ready, and is marked with date and price in plain figures; thus the worker on any subject can purchase the papers referring to it, and is not weighted with a mass of material useless to him. The parts 1 to 4 of vol. 2, recently received by us, contain the following memoirs:—"A Collection of Slugs from South Africa, &c.," by W. E. Collinge; "The Meteoric Irons from Griqualand East and from Bethany, Great Namaqualand," by Prof. E. Cohen; "The Moths of South Africa," part 1, by Sir G. F. Hampson, Bart.; "On the Anatomy of *Opisthopatus cinctipes*, &c.," by Dr. W. F. Purcell. These relate for the most part to material possessed by the South African museum, but Sir George Hampson, though he opens with a list of the collections upon which he has drawn, does not state the whereabouts of the type-specimens of any of his new species; at least we are unable to find any such statement among the extraordinarily abbreviated symbols which this writer favours, but which will not find much favour with those less learned than himself. But the "Annals" are clearly not intended for the Cape colonist, and this may possibly prove a mistaken policy some day.

General Notes.

AT HOME.

Mr. John Tym, Curator of the Corporation museum, Vernon Park, Stockport, died on August 25, aged 73, and was buried at Castleton church, Derbyshire, on August 28. Tym's museum at Castleton was for many years one of the great attractions of the Peak, and it was in many respects a model museum that larger places might have been proud of. In the arrangement of this museum, Mr. Tym had the approval and assistance of Professor Boyd Dawkins, who with the Rev. J. M. Mello, spent a good deal of time in investigating the geology of the Peak, to which Mr. Tym had devoted the greater part of his life. When the museum was sold some years ago, the bulk of it was, we believe, purchased by the Corporation of Stockport, and Mr. Tym was then appointed the curator of that museum, a position he held at the time of his death. But it was in his native home of Castleton that Mr. Tym was best known, and his labours in developing a true knowledge of the scientific character of that picturesque district will bear lasting fruit.

Recent important additions to the British museum, Bloomsbury, have now been incorporated into the collections, which have, also in many cases, been entirely re-arranged. A fine example of pre-historic burial from Egypt, showing the type of the pre-dynastic Egyptian, has been added to the department of oriental antiquities; while the shallow grave, with its pots and first weapons, has been reproduced exactly as it was found at Gebelen. The collection has also been enriched by a selection of objects from the graves of kings of the first and second dynasties, obtained by Professor Petrie from the royal tombs at Abydos. The Assyrian collection has been enriched by the purchase of a large number of Babylonian revenue tablets, dating from B.C. 2300. Among the fine series of royal letters is the clay memorial of the early Babylonian king Eannadu, which records the conquest of Elam about B.C. 4500. This is one of the finest specimens of archaic writing known. A rich collection of jewellery, ear-rings, necklaces, and some fine cylinder seals from Enkomi, in Cyprus, have been added to the department of Greek and Roman antiquities. In the ethnographic department the regalia of king Prempeh and a fine collection of Ashanti jewellery form an attractive exhibit, while two cases have been devoted to objects connected with the commemoration of Alfred the Great. The most popular portion of this section is the Waddesdon collection, presented by Baron Ferdinand Rothschild, which is supplied with a good catalogue. Another edition of the catalogue, illustrated with photographs of the more important objects, is in preparation. Many valuable manuscripts, among them being a selection of Greek papyri from the Fayoum in Egypt, have been added to the manuscript department.

At the National Gallery, the Venetian room, which has recently undergone a thorough renovation, is now open to the public, who will find that by judicious re-hanging the pictures can be much more satisfactorily inspected and studied.

It is understood that the late Empress Frederick has bequeathed her collection of curios and sketches equally to an English and a German museum. The English institution so favoured is the Victoria and Albert museum, South Kensington. The collection for England is said to consist almost entirely of drawings and sketches executed by the late Empress herself, many of them before her marriage.

It is said that Ireland is to have restored to her a number of her quaint old ornaments of great interest which have been kept at the British museum, over which controversy has been raging for four years past. These consist of a curiously designed boat, a model, it is supposed, of the old Irish "curragh," a bowl, two chains, two twisted neck rings, and a collar. All are of gold, and are very fine specimens of early celtic art. They will, for the future, find a home in the National museum in Dublin.

The Fulham Borough Council is to be asked on re-assembling to take into consideration the pressing need of providing a local museum. In consequence of the building operations which are going on in the borough most of the historic buildings have been demolished, or are threatened with demolition, and it is felt that Fulham should follow the example of Chelsea and other boroughs and secure, either by purchase or loan, as much as possible of the contents of such houses and place them in one well-ordered museum under municipal control. The matter is made urgent by the fact that the free library committee has now the option of purchasing, at a nominal price, a unique collection of nearly one thousand prints, maps, deeds, pamphlets, and other miscellanea relating to the parish. This would form a most interesting nucleus, and the opportunity to acquire the collection intact is never likely to occur again.

The foundation stone of the art gallery which Mr. Alexander Laing is presenting to the city of Newcastle, was laid last month by Mrs. W. A. Watson-Armstrong, of Craggside, Rothbury. The gallery is given by Mr. Laing in celebration of the jubilee of his business career in Newcastle. His offer to the Corporation was to build a gallery at a cost of £20,000, if they would grant him a site adjoining the free library, in New Bridge. This was accorded, after the corporation had acquired other land to extend the library when necessary, and the city is now in a fair way to escape the undoubted disadvantage it has been under in not possessing a gallery.

An outcome of the Ruskin exhibition at Coniston, Lancashire, last summer, is the establishment of a permanent Ruskin museum at that place, which was opened on August 31. Considering Mr.

Ruskin's association with Coniston, it seems at first sight perfectly appropriate that there should be some lasting memorial of him there, though it is somewhat doubtful if this kind of shrine for admiring pilgrims is quite in accordance with Mr. Ruskin's views. His desire for a museum was known by the attempt he made to form one in strict accordance with his own distinctive ideal at Sheffield, an idea which he in his lifetime only partially carried out, and it might have been more fitting to have developed the idea he thus started, than to form another museum apparently on the same lines, though lacking the essential element of the initiative of Mr. Ruskin himself.

An alteration of an important nature has just been effected in the Royal museum, Peel Park. The show-cases in which the ethnographical collections were for many years placed have been exchanged for others in which the objects can be seen to great advantage. As a consequence, the entire collections have been re-arranged, and this has been done on a principle that appeals strongly to the imagination of the visitor. Upon entering the gallery the visitor's attention is first drawn to the prehistoric section, where the earliest remains of mankind are found, illustrating the Palæolithic or Early Stone Age. Next one sees objects from the Neolithic or New Stone Age, and passes on then through the Bronze Age into objects of the early historic period (including Roman remains from the ancient camp in Manchester), and thence to recent times. From this point the collections illustrate the manners and customs of living savage and barbaric races, and are divided into six main divisions—Africa, South America, North America, Polynesia, Australasia, and Asia. The specimens in each main division are subdivided under the following heads:—Arts of life and of pleasure, war and chase, spirit world and religion, domestic economy, personal economy, carriage and transport. So far as a due regard to economy of space permits, these subdivisions are themselves geographically divided into the smaller districts into which the larger earth-areas mentioned above are mapped out. Several advantages are apparent in this arrangement. The student who approaches the study of ethnography from the standpoint of the geographical distribution of races of mankind has every facility afforded him; while anyone interested in certain customs, or who is desirous of studying certain classes of objects will find them ready grouped. For purposes of comparative ethnography, the value of this arrangement must be manifest. The provision of the new cases has not only allowed of a satisfactory arrangement of the collections, but by providing additional space it permits of the exhibition of a number of valuable and instructive specimens which have not hitherto been placed before the public.

Sir J. C. Robinson, F.S.A., for many years Surveyor of Pictures to the late Queen, has presented to the county museum at Dorset his collection of antique Roman glass, including many hundreds of specimens acquired by him in Rome.

The Bowes museum at Barnard Castle, which had been closed since the death of Mr. Bowes, has now had all its difficulties removed by the receipt of the sum of £38,000 from the executors of Mr. Bowes, on account of the museum endowment. After paying off all liabilities the sum of £20,000 has been invested at 3 per cent., so that there will be an annual income of at least £600, while it is expected that the museum will ultimately receive a much larger sum from the Bowes estate.

Rain, even in what has been a dry summer on the whole, bid fair to wash away the results of the labours bestowed on the museum at Hull, which is only just emerging from a state of stagnation into the vital activities that are now naturally essential to museum life. A thunderstorm in that town in August produced 2'86in. of rain in an hour, or in other words 287 tons fell in 60 minutes, being at the rate of more than 4½ tons per minute. In consequence of a stoppage in one of the spouts, the space between the museum ceiling and the art gallery floor was filled with water, and this flowed down in streams into the museum, flooding the floor, entering the cases, and doing much harm. It is satisfactory to know that, although the curator was in the building at the time, he was not entirely submerged, and his energies were at once exercised in duly cataloguing and arranging the diluvium in a suitable place outside the museum, which for once, at any rate, escaped the character, too often ascribed to such institutions, of being too dry.

The Report of the Manchester museum for 1900-1901 in every respect, except the income received from Owens College, is no less satisfactory than its predecessors. Among accessions to the collections we notice the gift by Mr. Paul Schill, of his cabinets of lepidoptera, including the valuable palaearctic material amassed by the distinguished traveller, H. T. Christoph. A shell of the rare *Pleurotomaria adansoniana*, from Barbados, has been presented by Mr. R. D. Darbishire. From the Layard collection of shells, over 2000 species have been added to the museum. The whole of the Austen collection of liverworts, well-known to students, has now been purchased by the museum, which already had a portion of it. Upwards of 1500 specimens of ferns have been presented to the herbarium, which is now extremely rich in this group of plants. The museum has also been enriched by large numbers of alcyonarian corals from different parts of the world, obtained for purposes of study by Professor Hickson. This last item is but one example of the advantage to the museum of its connection with a university college. The services of the professors and others in arranging the collections are fully acknowledged. In addition there is the interest aroused by the numerous lectures delivered by them on objects in the museum, an interest which, no less than the necessities of research work, largely conduces to the increase of the collections along definite and useful lines. The advantage is, of course, reciprocal, since the professors are enabled readily to illustrate any

point in their class lectures, while the advanced students are attracted to a class of investigation that gives them a real grip of many of the wider problems of natural history.

A work of special value to provincial curators has been the preparation and publication of sets of labels adapted for general use. These are for the most part merely names, as of families of mammals, of birds, of fishes, and of worms, and the principal divisions of the coleoptera; but there are also descriptive labels of the sub-classes and orders of mammals. "The policy of the museum in preparing and issuing these sets is justified by the fact that during the past year about £5 has been received from the sale of labels alone." This is work that one might have expected to see taken up by a more distinctively national or Government museum. But since such has not been the case, we must hope that the Manchester museum may be induced by an even larger measure of pecuniary success to continue its good work. Financial aid is, no doubt, always welcome to any museum; but the museum of a rich city like Manchester should not be forced to appeal so urgently for private support.

We have received the following communication from the Board of Agriculture:—"The Board of Agriculture, having received information of the appearance of an insect resembling the Colorado beetle (*Doryphora decemlineata*) among potatoes on premises belonging to the London and India Dock company at Tilbury docks, submitted the beetle and larvæ to their technical advisers at the Natural History museum at South Kensington, where they were identified as those of this pest, which has not previously been known to have bred in Great Britain, or to have been detected as imported in any but isolated instances. Inspectors of the Board were immediately sent to Tilbury to make an examination and report on the circumstances of the attack. The inspectors found that a patch of potatoes within a limited area on certain allotments occupied by men employed by the Dock Company was infested by the beetles, which were recognised as being present in various stages of their existence. In pursuance of an order of the Board, the immediate destruction of all the crops and grass within the area affected, which was fortunately isolated from other land, was promptly carried out. Careful examination of the surrounding area has failed to detect any other case where the beetle has made its appearance, and it is confidently hoped that the attack has been successfully arrested. The Board, nevertheless, desire to advise growers of potatoes of the danger which would threaten the potato crop should this voracious insect become established and common in this country. Provision was made for the contingency which has now arisen by the Destructive Insects Act, 1877; and the terms of the Colorado Beetle Order of 1877, issued under that statute, require all persons to give immediate notice to the police if any specimens of this insect are found, under a penalty not exceeding £10. The police constable, on receipt of such information, must at once inform the local authority (the same as under the Diseases of

Animals Acts), who are required to communicate by telegraph with the Board of Agriculture. It may be borne in mind also that by this order it is an offence, to which the same penalty is attached, to keep or sell any living specimen of the Colorado beetle in any of the stages of its life. The Colorado beetle is from one-third to half an inch long, of a yellow colour, with ten longitudinal black lines down the wing cases, and with reddish yellow and black legs. The larva, when mature, is very thick in the middle, and of an orange or reddish brown hue, with black spots on the lower portions. Long, oval, yellow eggs in clusters are laid by the female beetle on the under surface of the leaves of the potato, and these may appear also in certain weeds in the vicinity. Both larvæ and beetles feed voraciously on the potato haulm, but they are also known to feed on other plants, such as tomatoes and poppies, while, failing more congenial food, they may possibly be found on rough grasses and other weeds."

Although the library of the late Mr. Parnell has been sold, it is still hoped that the house and park at Avondale may be bought up as a national museum. For this purpose some £3,000 was subscribed a few years ago by Irishmen in the United States.

From Chester comes the prospectus of an Exhibition of Decorative and Applied Arts to be given in the Grosvenor museum there during October. It will be somewhat on the lines of the Arts and Crafts Show, and will include embroidery, carving, metal work, enamels, jewellery, bookbinding, miniatures, black-and-white, posters, printing, &c. Receiving days will be September 30 and October 1, from 10 a.m. to 6 p.m. The exhibition is undertaken by the Chester Guild of Arts and Crafts, with the Duke of Westminster for president.

Mr. G. H. Carpenter, of the Science and Art Museum, Dublin, publishes in *The Irish Naturalist* for August, 1901, a paper in which he attempts to show to the members of Irish Field Clubs how the natural history collections of that museum may be of service to them, and how they in turn can promote it as a national institution. The museum should contain and should exhibit a representative of every kind of animal inhabiting the country, and should also contain larger series of the Irish animals and plants for purposes of detailed study. "Such collections," says Mr. Carpenter, and his words are of general application, "can hardly be too rich." From these collections, special collections can from time to time be selected and sent on loan to local museums; while, by a prudent distribution of duplicates, the central museum can help to organise all the collections of the country. The Dublin museum with its staff of specialists can help private collectors and local museums in the determination of their specimens, and can enrich its own collections with the duplicates, which of course are gladly given. If all the officials of the Dublin museum share the views of Mr. Carpenter, it is clear that it will be a powerful influence in the higher education of the dwellers in Ireland and in the development of that country.

ABROAD.

The Annual Report of the Field Columbian museum of Chicago for the year 1899—1900 contains some very interesting observations and various useful plans of cases, one in particular, the herbarium case [p. 451], fitted with slides covered by a sliding door, so that the contents may be readily pulled forward and inspected, is especially noteworthy. A most complete series of lectures has been given during the year, illustrative of various exhibits, and the museum now possesses 2,022 lantern slides. Ten publications have been issued, the most important being the second part of Professor Cory's "Birds of Eastern North America." The library has received an accession of 400 volumes of ornithological works, given by Mr. Edward E. Ayer. A full description is given of the method of cataloguing new specimens, which in its general outlines resembles those in ordinary use. A great and valuable feature of the museum is the number of expeditions it sends out. The following is the complete list—would that this could be done in this country! :—

LOCALITY.	COLLECTORS.	MATERIAL.
Ozark Mountains, Arkansas..	H. W. Nichols ..	Zinc Ores.
Six Nation Reserve, Canada.	S. C. Simms	Ceremonial paraphernalia [and Anthropology generally].
Pacific Coast States.....	George A. Dorsey	Ethnological material, &c.
Union County, Illinois	Dr. W. A. Phillips	Aboriginal ... material.
Western Colorado.....	E. S. Riggs	Fossil Dinosaurs.
Muskoka Lakes, Ontario, Canada	S. E. Meek	Fishes, &c.
Southern Indiana	O. C. Farrington	Cane formations.
Little Lower Colorado River, Arizona	J. A. Burt	Archaeological [Hopi Ruins].
Province of Tusayan	Charles L. Owen	Archaeological [Hopi Ruins].

For these expeditions the museum seems to have special donations, we note one of 5400 dollars towards the very important researches which the museum is making in the Hopi ruins in the Southern States and Mexico—over 40 boxes of material having been received by the museum from this source. The Colorado expedition resulted in the remains of several dinosaurs being discovered, including one humerus, 6 feet 10 inches in length, much larger than any previously found. The report contains many really admirable photographic reproductions, amongst which the group of Polar bears, pl. 52; group of Swayne's hartebeest, pl. 54; and the Hopi shrine, pl. 43, deserve especial commendation, as does also the practice of giving on the plate the name of the taxidermist who has mounted these life-like and attractive groups.

One of the most recent of local collections is that recently arranged by Mr. Frank M. Chapman, of the American Museum of Natural History, to illustrate the bird fauna of the vicinity of New York City. The main case in the bay assigned to this collection is devoted to birds actually taken within fifty miles of New York, a

second contains the permanent residents, and a third the migratory species. This bears the legend, "Birds of the Month," and its contents are changed accordingly. By this method of arrangement the visitor can see at a glance not only the birds of the vicinity, but those to be found at the date of his visit, some of which he would be pretty sure to see in the adjoining park. There is, furthermore, a case containing the nests and eggs of local birds, and one in which are displayed photographs from nature of nests and birds, some of them of remarkable interest. Finally, there are two small cases containing specimens illustrating various terms used in ornithology, such for example as those defining the shape of the tail, character of the bill and feet, and colour and markings of the feathers, the whole forming an exhibit that is at once attractive and instructive.

There has also been prepared under Mr. Chapman's supervision a large group showing such an assemblage of birds as may be seen at the famous Bird Rocks in the Gulf of St. Lawrence. No section of the rock has been directly copied, but the attempt has been made, and successfully, to show the habits and habitat of the various species. Thus the earth and shale at the top contains the burrows of the petrels and puffins, the broad ledges are occupied by gannets, the narrow by murre, while the razorbills are nesting in the angles, and the nests of the kittiwake gulls are built on the narrowest ledges of all. Including old and young, this group comprises 72 birds, and occupies a case 17 ft. 8 in. long, 6 ft. 8 in. high, and 4 ft. deep.

From a circular addressed by the French Minister of Public Instruction to the mayors of all towns possessing a museum, it appears (says the *Siecle*) that there is an organised band of thieves going about France who are experienced in the art of abstracting valuables from the provincial museums. The custodians of museums are therefore warned to be on their guard against plausible strangers.

It is a regrettable fact that the Musée du Luxembourg cannot exhibit all the pictures in its possession, many fine works being stored away in cellars. In the case of the foreign sections, however, M. Bénédite, the keeper of the museum, is about to introduce a praiseworthy scheme. He purposes showing the works of the "maîtres étrangers" in schools, changing them at short intervals, so that in the course of a year visitors from abroad will be able to see the paintings and sculpture of their own native artists. At the moment Belgian art is being displayed, Stevens, Villaert, Rops, and Jongkind representing the best art of Belgium. At the beginning of September these works will be displaced by canvases from the brushes of Whistler, Sargent, Brangwyn, Lund, Lorimer, Leighton, and others of the British School, which will be followed in turn by the Slav, German, and Italian Schools.

The museums of Paris are in luck just now, many valuable gifts having recently enriched their collections. The latest dona-

tions to the Musée Carnavalet are a flag of the Revolutionary period, an autograph of General Jourdan, and a snuff-box of the Restoration, decorated with a portrait of Louis XVIII. These articles were presented by Madame Waldeck-Rousseau. To the same museum Madame Delcassé has sent a charming antique urn, beautifully ornamented, and containing several interesting relics, among them a piece of wood from the coffin of Napoleon.

A discovery of much interest and importance has just been made in the Paris Garde-Meuble. In a corner of the building which no one has entered for thirty years has been found a valuable collection, formerly belonging to the old museum of the Kings of France. Among the relics brought to light are one of the crowns of Charles X. and that used at the funeral of Louis XVIII., the complete costume of a chevalier, the gold-cloth robe worn by the Dauphin at the last Sacrament of Rheims, the bureau armchair and the Tuileries Throne of Napoleon the First, the sedan chair of Marie Antoinette, the cradles of the King of Rome and Comte de Chambourd, and a bell of Louis XVIII., along with many other precious curiosities.

Correspondence.

MUSEUM LABELS—The Owens College set are very useful, but unfortunately they are written in *Latin* and not in *Anglo-Saxon* English, and so do not meet the requirements, at any rate of Colonial museums, as the following remarks will show:—I had just affixed the Descriptive Label,—"The *Fissipedia* " or Paw-footed Carnivores are in general adapted for terrestrial "progression, &c.. &c." When an intelligent workman, who is a frequent visitor, came along, and read as far as I have quoted and then asked "What's *terrestrial progression*?" I explained in Anglo-Saxon, and he pertinently commented "Then why doesn't it say so."

B. H. W.

FRANK SUTER & Co., Ltd.,

. . Electrical Engineers, . .

**Designers and Manufacturers of Electric
Light Fittings.**

SPECIALITY :

Picture and Museum Case Lighting . .

. . By Suter's Registered Reflectors.

FRANK SUTER & CO., Ltd.,

66, BERNERS STREET,

. . LONDON, W.

Marine Biological Association of the United Kingdom

**Specimens of MARINE ANIMALS and PLANTS specially preserved for
Museum purposes. For detailed Lists and Prices apply to**

THE DIRECTOR, BIOLOGICAL LABORATORY, PLYMOUTH.

SONS, Ltd., ESTAB.
1846.
LONDON, E.C.

Museums or Private Collections.

Supplies to the British Museum, &c.

Articles of any description made to order.

(Patented). 3/6 per gross.

It has a sharp needle point.
Useful in any position in trays or
stands, &c. Altogether one of
the best introduced and very cheap.



No. M 3.—12/- per gross.

For holding specimens from edges of glass
or wood shelves.

Hooks for Cases, &c.

Are guaranteed truly tapped, bronzed
and non-corrosive).

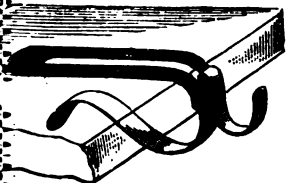
Medium

Large K

K

per gross.

10/- gross.



STEEL SHELF HOOK.

Specimens from $\frac{1}{4}$ or $\frac{3}{8}$ inch shelf.

9/- per Gross.

$\frac{1}{2}$ inch shelves at same price.

THE IMPROVED "SPINSLER"
"REVERSED"

1008. Price, 8/- per gross.

For holding descriptive labels. Having two spikes
completely rigid when once pressed into

A sample will be sent Free on application.



Aidersgate Stand (Patented)

For holding descriptive cards at any angle.

2 in. by $\frac{1}{2}$ in. .. 10/- per gross.

$\frac{3}{4}$ in. by $\frac{1}{4}$ in. .. 24/-

Ltd., ESTAB.
1846.

LONDON, E.C.

Series to the British Museum,
Museum, Horniman Museum,

Illustrations, and Samples, on



No. BT3.

"Simplex" Shelf Clip.

holding specimens from $\frac{1}{2}$ or $\frac{3}{4}$ in.
especially useful for long narrow
labels.

per doz.; 15/- per Gross.



Glass-Topped Specimen Boxes.

White paper inside and black out-
side as used at the Geological Museum,

Depth.	
by $\frac{1}{2}$ in.	18/- per gross.
by 1 in.	21/- "
by $1\frac{1}{2}$ in.	24/- "
by 2 in.	27/- "
by 2 $\frac{1}{2}$ in.	31/- "
by 3 in.	36/- "
sorted equally	27/- "

Prices are quoted. Any other size,
to order.

Take in the following sizes covered

in.	24/- per doz.
in.	30/- "
in.	36/- "
in.	42/- "
in.	48/- "
in.	60/- "
in.	72/- "



Nest Cardboard Tray for
Specimens.

width, and finish as boxes No. 14,
but are $\frac{1}{2}$ in. high.

2	3	4	5	6
6/-	7/6	9/-	10/6	per gross

Larger sizes to order

Card for Mounting or Writing.

Per d.-2.

by 19, 6-sheet cardboard,	2/3
by 19, 8-sheet cardboard,	2/6
by 19, 12-sheet cardboard,	3/-
by 19, stout tinted board,	3/6
ivory card, 24 by 19, thick,	4/6
ivory card, 24 by 19, medium,	4/-
ivory card, 24 by 19 thin,	3/6

Above sizes at half the prices.

NS, Ltd.,
, LONDON, E.C.

ESTAB.
1846.

hibition or Private Collections.

BRACKETS,
ES.

cket J.

Standard Bars
Quality and Finish.

are stocked:—

BRONZED.

10	12 inch.
2/3	2/9 each.
21	24 inch.
6/6	8/6 each.

IRON (Warranted).

10	12 inch.
1/6	1/9 each.
21	24 inch.
4/6	5/6 each.

L TAPPED BAR; Brass, Bronzed, 1/- per foot.

BASES.

earnestly solicited to
ell for many purposes,
mpulsory. We quote
ALL VALUE. Packing
dition, carriage paid,

not less than 4 feet.

op Doors

35/- per foot.

ALL VALUE, 9in. high

30/- "

earable Trays:

22/6 "

4.—Useful Cabinet for private

ectors or Duplicate Specimens.

ight wood covered cloth, brass handles.

15 by 12 by 8 (4 drawers) 16/6

18 by 15 by 20 (5 drawers) 21/-

20 by 18 by 12 (6 drawers) 25/-

34 by 20 by 16 (8 drawers), 30/-

**Ltd., ESTD.
1846.
LONDON, E.C.**

Private Collections.

DIMENSIONS.

Total height, 6ft. 3in. (excluding ornamental iron cresting and finials).

Table Height, 2ft. 9in.;
Depth, 4ft. 6ins.

Total height of Show Case (excluding cresting), 4ft. 6in.

Height of upper part of Show Case, 2ft. 13in.

Depth of upper part of Show Cases, 14 in.

The lower portion of Show Case measures at its highest 5in., and at its lowest 9in.

Bottom of Case is covered with Claret or Blue coloured cloth.

The under part of Case is fitted with Drawers, free in height and length, according to dimensions of Case.

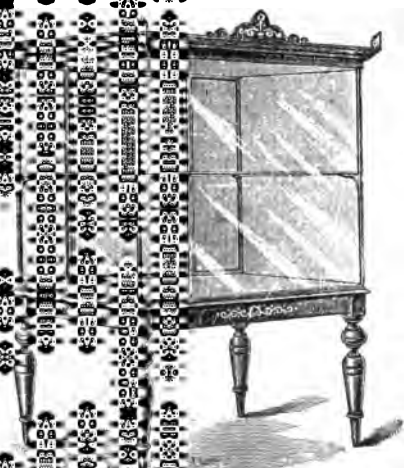
All Sashes are made in the "air-tight" principle and Glazed Plate Glass.

by 4ft. 6in. by 6ft. 3in., 18 Drawers, **£66 10/-**

by 4ft. 6in. by 6ft. 24 Drawers, **£78 10/-**

by 4ft. 6in. by 6ft. 30 Drawers, **£95**

If delivered outside London, an extra charge is made for packing, according to size, varying from £3 upwards.



Any Plate-Glass Case.

round and top, carved pedestal with one full-sized plate-glass sash and brackets. Splendid

BOTANICAL SPECIMENS

FOR MUSEUMS.

CONES OF RARE CONIFERS.
INFLORESCENCES OF CYCADS,
CYCAS, ZAMIA, MACROZAMIA,
CERATUZAMIA, STANGERIA, ENCEPHALARTOS, &c,
MALE AND FEMALE.

SECTIONS OF BRITISH AND OTHER TIMBERS.
SPECIMENS FROM THE TROPICS.
SPECIMENS IN ALCOHOL and other media.

Models of British Fungi.

ECOLOGICAL SPECIMENS.

ANATOMICAL SPECIMENS.

HERBARIUM SPECIMENS.

Insectivorous and Parasitic Plants.
SETS ILLUSTRATING ECONOMIC PRODUCTS.
PATHOLOGICAL SPECIMENS.
FOR PARTICULARS SEND FOR SPECIAL PRICE LIST.

J. BACKHOUSE & SON, LIMITED,
THE NURSERIES (Scientific Department,)

Telegrams: "BACKHOUSE, YORK
'Scientific.'"

YORK.

W. D. WEBSTER,

Home Court, 24, Palace Road, Streatham Hill,
. . LONDON. . .

**COLLECTOR OF ETHNOGRAPHICAL SPECIMENS,
EUROPEAN AND EASTERN ARMS AND ARMOUR,
PREHISTORIC AND OTHER ANTIQUITIES.**

Telegraphic Address : " ETHNICALLY, LONDON."

ILLUSTRATED CATALOGUE published every three months. Each copy contains 20 plates reproduced from photographs, and is subscribed to by all the principal Museums in the world. Subscription 10/- per year, post free, payable in advance.

A few bound Catalogues can still be obtained at the following prices :—

Vol. 1	contains Catalogues Nos. 1 to 10	- -	30/-
Vol. 2	ditto Nos. 11 to 17	- -	20/-
Vol. 3	ditto Nos. 18 to 23	- -	25/-
Vol. 4	ditto Nos. 24 to 27	- -	25/-

The Collection consists of over 10,000 specimens from all parts of the world, any of which will be sent on approval on carriage being paid.

SPECIMENS BOUGHT OR EXCHANGED.

<u>Photographs of</u>	in their SUMMER and WINTER appearance, with enlarged views of their bark, leaves, flowers and fruit showing details of structure and growth.
<u>Familiar Trees</u>	MAY BE SEEN at the British Museum ; Royal Art Library, South Kensington ; University College, London ; University College, Liverpool ; Museum of Science and Art, Edinburgh ; &c., &c. Lists on application.
<u>Plants & Flowers</u>	

HENRY IRVING, The Rowans, BROMLEY, KENT.

W. F. H. ROSENBERG, F.Z.S.,

57, HAYERSTOCK HILL, N.W.

Importer of Exotic Zoological Collections.

Fresh Consignments in all branches of Zoology constantly arriving.

PRICE LISTS FREE.

SPECIMENS SENT ON APPROVAL.

MUSEUMS ASSOCIATION.

Some of the earlier volumes of the Report are nearly out of print, and Museums requiring complete sets should order them at once. Particulars can be obtained from the Secretary, Museum, Sheffield.

MUSEUMS ASSOCIATION.

President :

Sir WILLIAM TURNER, K.C.B., B.SC., F.R.S., D.C.L., L.L.D.

Treasurer :

Alderman W. H. BRITTAIN, J.P., F.R.G.S. (Sheffield).

Hon. General Secretary :

E. HOWARTH, Museum, Sheffield.

The object of the Association shall be the promotion of better and more systematic working of Museums throughout the Kingdom. In order to promote a better knowledge of Museums, the Association shall meet in a different town each succeeding year.

That each Museum contributing not less than one guinea a year be a Member of the Association, and that individuals interested in scientific work be admitted as Associates on payment of 10s. 6d. annually.

That each Museum be represented by three delegates, each having one vote. Each Associate to have one vote.

That each Museum belonging to the Association and each Associate receive one copy of the publications of the Association.

That a General Meeting of the Association be held annually, for the transaction of business, the reading of papers, and the discussion of matters relating to Museums.

The Library Association.

THE twenty-fourth annual meeting of the Library Association was held in the last week of August at Plymouth and Devonport, on the joint invitation of the municipal authorities of the two boroughs. This was the second visit of the association to Plymouth, the eighth annual meeting having been held there in 1885. The president of the year is Mr. G. K. Fortescue, keeper of the printed books in the British museum, who in his presidential address dealt chiefly with the recent history of that section of the national library. The great event of the year was the completion of the printed catalogue of the department up to the end of 1899. After referring to the many great defects of the "transcribed" catalogue, which in 1881 filled 3,000 folio volumes, with an early prospect of reaching to double that number, he ascribed the merit of the achievement by which this has been reduced to print, first to the late Sir E. Bond, K.C.B.; afterwards to Dr. Garnett, C.B., the president's predecessor both in the keepership and the chair of the association; and to Sir E. M. Thompson, K.C.B., the present director of the museum. The number of "entries" in the catalogue at this moment is estimated at between 4,200,000 and 4,500,000, and the additions each year amount to between 30,000 and 40,000. It is often said that the catalogue is one of authors only, but that is only partially true—some headings, as "Bible" and "Liturgies," are complete, and so far as biography is concerned the catalogue is a subject catalogue also. Here the president paused, as he said,

to give utterance to the faith that is in me on this much disputed matter of catalogue-making, I have formed, so far as I know, but one dogmatic conviction, and it is this: that the best catalogue which the art of man can invent is a catalogue in two inter-dependent yet independent parts; the first and greater part an alphabetical catalogue of authors, the second and lesser part a subject index.

The alphabetical part of the catalogue being printed, what is the museum going to do next? The five-yearly subject-index volume (which we owe to the president himself) is to be continued, but there is at present no official intention of anything more comprehensive.

The latter part of the address had a more personal interest, containing a charming statement of the speaker's views and feelings in regard to

the librarian's work, so difficult, so responsible, but still in many ways so full of hidden rewards. Shall I excite your sympathy or your scorn when I say that to my thinking arranging books, cataloguing books, dealing with books in whatever way you please, . . . is about the very pleasantest way of earning a livelihood which the heart of man can desire.

The programme included papers on the usual local topics—the libraries of Plymouth, the libraries of Devonport, the libraries of the west of England—but by a happy arrangement which deserves the sincerest form of flattery, every such paper was distributed in print and taken as read. It is no desire to disparage the "local" paper which leads us to say this; but the fact is that, however well written and full of information, and, therefore, deserving of publication, the "local" paper is not discussible. Another interesting feature of the programme was the result of an arrangement by which certain subjects, to wit (1) Reference Libraries, and (2) Cataloguing and Catalogues, were selected beforehand, and members of the association representing different points of view, or known to hold conflicting opinions, were invited to prepare papers upon them. The experiment was not unsuccessful, and produced what is the real *raison d'être* of that (and this) association, an animated discussion. The discussion on catalogues was perhaps the point at which the proceedings most nearly touched the interests of the museum, as distinct from the library, but no conclusion was arrived at or to be hoped for—the two parties advocating respectively the index catalogue and the classed catalogue continued, and will certainly for some time continue, to differ. It would certainly make for happiness and for progress if they could only *agree* to do so.

The annual report, a document of twenty-four closely-printed large octavo pages, was discussed at the session on the

Wednesday evening, which, according to custom, was devoted to business. A slight increase in the membership of the association was shown, chiefly by the addition of fourteen libraries to the list of institutions subscribing. The total number of members and associates on the roll is now 593, including 153 institutions, a state of things upon which our friends the librarians are to be congratulated. An Act to amend the Libraries Acts was said to have received the Royal Assent, but at so late a date, and after so hurried a passage through the House of Commons, that the honorary solicitor was unable to say how far it coincided in its final form with the Bill introduced on the initiation of the association; but it seems clear that no attempt had been made to remove the one great hindrance to the growth of both libraries and museums—the limitation of the rate to one penny in the pound. A list was given of fourteen places which had adopted the Libraries (which is also the Museums) Act during the year; but although great developments may be hoped for, even with that limitation, in the enormously rich city of Westminster, it would be interesting to know what kind of museum or art gallery is expected to arise on the basis of a penny rate in Steeple Claydon or Newton Abbot. The financial statement disclosed a pleasing state of prosperity, and a balance of income over expenditure, which is estimated to continue, of £90 a year. But some people are difficult to please, and it was made a charge against the council that they had failed to spend this balance. The warmest discussion of the meeting arose on a proposition that the council should take steps to introduce a rotation of retirement amongst its members—*i.e.*, to provide that a certain proportion of the council should retire each year, and be ineligible (for one year only) for re-election. This idea, which is such a matter of course in so many institutions, including the Museums Association, appeared to be viewed with horror by the authorities, and was resisted, even to the point of resignation. But, as so often happens, the real issue was obscured by burning personal questions, and it was difficult for a disinterested member to vote either way. The proposal was, however, carried; and so we suppose that the immense council, numbering—London members, county members, vice-presidents,

past-presidents, and officers—in all more than fifty names, will undergo some slight disturbance. An invitation to meet in Birmingham next year was gladly accepted.

There is not space to do justice to the social side of the meeting. The two towns received the visitors with the utmost cordiality, and receptions, luncheons, and afternoon teas were common form. There were several most interesting excursions; by the courtesy of the Naval authorities, the dockyards and men-of-war in the Hamoaze were inspected in detail, the members were personally conducted through the laboratory and aquarium of the marine biological station, and a visit was paid to the Earl of Mount Edgecumbe's delightful fifteenth century manor house of Cotehele, a dozen miles up the Tamar. Finally, a day was set apart for a drive to Tavistock and the moor.

C. M.

DRESDEN MUSEUM.—Dr. A. B. Meyer, the director of the Dresden museum, and well known to all scientists as one of the foremost German zoologists of the day, has been paying an official visit to London. A new museum is to be built at Dresden, and Dr. Meyer has been commissioned by the King of Saxony to visit the principal museums of the world, with a view to making himself acquainted with the latest ideas and improvements in museum methods and organisation. In pursuance of this mission he has already been to America and seen the chief museums in the United States, and he is now in this country going through our great national institutions. As regards ethnological collections, it is to be feared that Dr. Meyer will see nothing in England comparable to the magnificent museums in America and Berlin, but he is much impressed with the extraordinary wealth of material stored in the Natural History museum at South Kensington, for, so far, he has seen nothing to approach the completeness of our national collections.

Industrial Museums in their Relation to Art.

BY PROFESSOR G. BALDWIN BROWN, M.A.

(Read at the Edinburgh Conference.)

THE purpose of this brief paper is a practical one. It asks the question, In what way can our industrial museums be made most efficacious in the teaching of the industrial and decorative arts? And it may conduce to clearness if it is said at the outset that the contention of the paper is that our industrial museums, as at present constituted, are far too miscellaneous to be of much practical help, but that it might be possible to create special departments or sections in them, in which the worker should find real guidance and not merely mystification. For that these museums were intended to exercise a direct educational influence is well understood. The industrial museum and the school of science and art were started in connection with a movement which originated with the great exhibition in Hyde Park in 1851. It is a remarkable fact in the general history of human culture that that exhibition was held only fifty years after a time when, at the end of the eighteenth century, the tradition of the industrial arts was still a living thing in western Europe; and yet, in looking back, one doubts whether any such collection of horrors in the form of objects exhibiting every conceivable artistic fault was ever brought together in the world. Happily, with the exception, of course, of the late Queen's jubilee presents, no such collection of horrors has since that time been seen. In the half century that has just closed, there has been an improvement both in the taste of the public, and in the quality of the industrial output; and it is certainly more easy now than it was fifty years ago to secure artistic or at any rate simple and pleasing work in the fittings of our houses and in the material apparatus of daily life in general.

The credit for this can, however, only to a limited extent be assigned to our government-aided schools of art, or the museums therewith connected. If we allow to these the utmost that any dispassionate observer would claim for them, the fact still remains that the most has been accomplished by

agencies independent of the Science and Art Department. The name chiefly connected with the movement of revival is that of William Morris, and Morris stood quite outside the government system referred to. Results have shown that the South Kensington system—to give it a convenient name—has practically failed in the higher regions of its work. It has taught ordinary drawing and painting very largely, and what is called "design" to a more limited extent; but its contribution has been rather in the form of mechanical rules, than of that impulse, that breath of life, for which our artistic industries have so long been pining.

No doubt the Department of Science and Art has worked during a long term of years with the most conscientious zeal in fulfilment of its own appointed methods. These methods were in many ways excellent for the teaching of science, where there is a mass of definite facts and figures to be mastered. Of course there is a great deal more in science than these. There is in science a field for the exercise of the higher intellectual powers, of the imagination, of the generalizing philosophic faculty; but at the same time the basis of scientific work consists largely in these definite facts and figures which only steady and systematic application can master. In the case of art the methods in question do not necessarily apply, and the attempt to make them apply is a fatal result of that extraordinary arrangement by which those incongruous yokefellows, science and art, have been driven together in double harness. For the artist is not a creature to be stuffed with knowledge and then examined. He needs suggestion, stimulation, inspiration if we can give it to him, and then a guidance suited as far as may be to his own idiosyncrasy. We may take infinite pains to instruct and to edify him, while all the time we are deadening his higher artistic powers.

What has happened may be paralleled by what has taken place in the modern history of the science of botany. The older botanists, one's scientific friends tell one, did not care in the least for a plant till it was dead. When it was plucked, and dissected, and pressed flat, and dried, and gummed down on a card, then they classified it, gave it a long Latin name,

and rejoiced over it exceedingly. People who are still alive have told me that after they had gone through botany courses under famous teachers, they could not for months after look at a growing plant in the hedgerows without pain—such musty vegetable charnel-houses did it remind them of. Now-a-days a plant is regarded as a thing of life, a growing organism. If we open a botanical book of the day, such as Von Kerner's *Pflanzenleben*, we see the vital principle at work in all forms of plant development, so that the tender sun-nurtured things rise and unfold themselves before the mind's eye in all the gracious energy of life.

Now what happened when the Science and Art Department was formed? Ornament, which is itself like a lovely, delicate, growing plant, was promptly sentenced to die. "My Lords" did what boards and royal commissions are wont to do—they sat on it; and when by this process it was crushed as flat as an orthodox botanical specimen, they then began to dissect it, and classify its kinds, and put it away for future use in museum cases or between the covers of Owen Jones's folio. It became "historic" ornament, a thing greatly loved by the official mind, because it is always there ready to hand, dried and mounted; it never varies; never eludes the departmental thumb; and can at any moment be "applied" to any object that it is naively intended by this process to turn from a work of utility to one of art.

It need hardly be said that no good can come of looking at ornament as if it were a dead thing belonging to the past, or an independent thing to be used or let alone at will. Whatever ornament is or ought to be, it should not be looked upon as "historic" or "applied." Ornament should be treated as a thing that is alive and that grows. It is not something apart from the object adorned, that can be plastered ready-made on to a ready-made object of use; but something that should grow out of the material and the process, should be in intimate and organic union with the object.

All this may seem to have no very direct connection with museums, but as already explained, the industrial museum is just a part of the educational machinery of the department, and is necessarily inspired by the departmental ideas. As in

this paper a suggestion is ventured on in favour of some change in the existing museum arrangements, it is necessary to make clear the general principles on which the suggestion is based. Hence these preliminary remarks on the spirit of the existing system generally may claim some justification.

Turning our attention now to existing industrial museums, including South Kensington museum, the two museums in other capitals affiliated thereto, and the numerous museums that are locally governed, but in which there is a certain Science and Art Department element, one notes in each case, taking of course only the art side of the museum, that part of the collection consists of originals, part of reproductions. The originals one would be inclined to divide into the miscellaneous and the local collection. The first we may pass over. Miscellaneous it must remain, because the acquisition of original pieces depends on circumstances, as well as on the varying fortunes of the never-ending duel between the custodian and the dealer. If these pieces do nothing else, they illustrate, though of course in a very dotty, disjointed fashion, the past history of the industrial arts, and bad artistically as many of them may be, as things once, nay often, still admired, they have an interest for the philosophical student of human taste.

Of far more practical importance than the general show is that part of the museum devoted to local collections. There is here a great and serious work before the managers of museums, a work that is really of national importance, but can only be carried on at local centres. What task can be more interesting, more patriotic, than to gather together in originals or reproductions the evidences of the artistic activity of the people of one's own country or district, in those old days when the arts were still living things in every town and village of the land. Dublin is in this respect the most fortunate of our centres, owing to the happy accident that the priceless collection of Irish antiquities belonging to the Royal Irish Academy is housed in the industrial museum. There the present generation of Erin's children can see what their remote ancestors accomplished in the days when Ireland held up the lamp of learning and of art in the face of a barbarized Europe. That these local collections have a direct practical

value for the worker follows from what has been said before about the importance of stimulus, of inspiration, to the artist, rather than of mere instruction. Surely the creative impulse will begin to stir in some when they realize what the men and women of their own race, their own country, their own village perhaps, accomplished in days of yore.

Here in Edinburgh, the great collection of Scottish antiquities, far more varied archæologically, though of less intense an artistic interest than that in Dublin, is quite distinct from the Industrial Museum. The latter has, however, done good national work in getting together casts of some of the more artistically remarkable of the old Scottish sculptured stones. A good deal more might be done as time goes on in securing any bits of genuine old Scottish carving in stone or wood, or in the reproduction of characteristic examples, so that the old industrial arts of Scotland may make the existing industrial arts duly ashamed of themselves. Even the carved thistles and other devices on the gable tops of the little dormer windows in the old town of Edinburgh should be preserved, as well as specimens of the moulded doorways of which so many still exist. Provincial museums in England have done good work in collecting examples of local industries, such as specimens of artistic wrought-iron work which used to be turned out as a matter of course by the village smith.

To the central museum at South Kensington we should naturally turn for a proper representation of the industrial and decorative arts of England generally. It is here, however, that we meet with the greatest disappointment that the museums of the country generally have to inflict. The so-called architectural court at South Kensington is not a place where national self-love is flattered. If there is one thing of which our country may justly be proud, it is of its Gothic architectural detail. Yet in that court, which should surely display the most characteristic beauties of each really mature style, there is hardly any account taken of early English Gothic, though it affords one of the best lessons the arts have to teach in purity of style and chastity of ornament; while in this court and the museum generally the semi-barbarous work of the two elder Pisani and the florid picturesque late Italian

carving is flaunted on every side. The South Kensington museum seems, indeed, given over to that indiscriminate worship of everything Italian which one expects in a school-girl who has been reading Ruskin, but not in those who are looked to to guide the taste of the nation towards what is really sound and praiseworthy in art. It is most characteristic of South Kensington, that the Old Testament gates of Ghiberti, though they are a snare to the modern modeller, have been multiplied by innumerable copies; while the earlier and simpler gates of Andrea Pisano, the work of which has something in it of the spirit of the best French and English Gothic, are completely ignored.

We are passing, however, here from the general side of the museum to that devoted to reproductions, upon which more will have to be said, and may leave this point with the expression of a hope that one of the first things done in the new museum buildings at South Kensington will be to reproduce a selection of those English Gothic mouldings, arches, piers, caps, bases, porches, screens, and, above all, tombs, about which Mr. Edward S. Prior has recently written so eloquently. The central museum should be national first, and only Italian and nondescript in the second place. Let us hope, at any rate, that no more such monstrous blunders as the reproduction of the facade of San Petronio at Bologna will be repeated, and that some of the money that goes now for those costly toys, the models of Italian decorated apartments, will be spent on a proper representation of the beauties of our own mediæval art.

When we pass from the collections that are wholly or in most part of originals, to the collections of reproductions, we are in a region where choice has a comparatively free hand. Originals must be bought when and where they offer themselves, and selection, with a limited budget, can only be indulged in to a minor extent. In the case of reproductions, there is no such waiting on the market, no forcing of the buyer's hand. If not every object, yet certainly nearly every kind of object can be reproduced.

But just because the field of selection is so large and so open, the utmost care and discrimination in choice is needful.

It is just in this matter that museum work might be strengthened. It is not money that is wanted here, but brains. This reproduction-side is or ought to be the most directly educational side of the museum, for every piece should be chosen for some special reason as illustrative of some artistic merit or some technical process. The museum should work here in direct relation with the school, or at any rate the scheme of training or guidance, for the practical craftsman. On the old "historic ornament" system no great discrimination was called for. There is none in Owen Jones. All that was necessary was to get together casts of ornament of all kinds, chiefly, of course, the cold and conventional Italian, that could be sketched from by students. Brucciani's catalogue of approved casts is a measure of the departmental ideals of a generation ago. The newer system of regarding the decorative arts as not really dead but only asleep, and capable of revival through the same methods by which they originally came into existence, leads to a different and a more serious demand on the managers of industrial museums. What sort of examples would be of practical use in the furtherance of this revival may be better seen if we glance for a moment at the real facts of the development of the industrial arts in the past.

If we look back over the history of these industrial arts, we see each phase of them beginning in the workshop, at the forge or the bench, by the potter's wheel, or on the plasterer's platform. A workman fabricates a cottage, a piece of furniture, a utensil, an implement, simply because there is a demand for such a thing. He makes it to fit the use, and as he is familiar with the method of its employment, so he adapts its form and structure to the purposes it will have to serve. So far there is nothing artistic in the operation, but the artist in the man, though he knows it not, is beginning to awake. Let us suppose, for the sake of simplifying matters, that we are dealing with the craftsman of a mediæval English village, and that the demand is for a half-timber cottage for a chantry priest, and new iron hinges for the church door. The technique of the half-timber cottage is itself of interest, and it is to be hoped that in the new museum at South Kensington

space will be found for some good specimens of this national craft before they all disappear from the country side, and are replaced, as I saw being done the other day in Kent, by structures of concrete and corrugated iron. We are not, however, concerned with the technique, but only with the manner in which a certain element of art and beauty finds its way into the structure while it is in process of fabrication, so that the maker becomes an artist without thinking of it. The mere process of manufacture, with the use of the two boldly contrasted materials, wood and plaster, results in itself in a pleasing decorative effect, so that there is really no need for any special enrichment, and none such appears in many quaint and charming bits of old half-timber work in different parts of the country. Some ornamentation is, however, very commonly present, and the genesis of it is interesting to trace.

In its simpler forms it is a spontaneous growth out of the structure, or, perhaps, at times is scarcely other than the natural marks of manipulation on a material, rendered a little more emphatic and regular. The craftsman was not influenced by any doctrine about the artistic value of adornment, but he had certain natural instincts that led him to supplement in this way the piecing together of his fabric. To take some obvious instances of this, we may see that every projecting end struck him as a thing not to be cut off and left raw and plain, but to be hewn into some shape that would give pleasure to the eye; every change of direction in a surface seemed to him to need some added feature that should act as a "stop" and accentuate the point of divergence; every large unbroken surface suggested the introduction of some diversifying details in form and colour. What the shape of feature or detail should be depended on the amount of time or fancy the craftsman was able or willing to give to it. The ultimate form was a matter of indifference; the really artistic point in the whole process was the natural, almost inevitable growth of the ornament out of the structure. If we can get our furniture makers to treat their material and their forms in the same spirit, we shall have done more to revive the craft of woodwork than if we taught them to copy all the French furniture of the eighteenth century.

Meanwhile, at the other end of the village street, the smith is manipulating his iron bands into the required hinges for the church door. The door is heavy, and the hinge must grip it firmly, and it will add to the strength of the woodwork if the iron spreads over it so as to form a sort of armature. He begins, perhaps, by merely splitting the width of his iron strip in half, and spreading the two parts outward, so as to broaden the hold upon the woodwork. This spreading is, however, managed in such a way as to satisfy the eye as well as secure the necessary width of attachment. The smith of to-day, who is about the only surviving representative of the older traditions of the manual arts, has an eye still unspoilt, and takes a real pleasure in the sweetness and fulness of the curves in his scroll-work. Still more careful was his mediæval brother, and the branching ends of the hinge would certainly be brought round with a sweep that represents a distinct though hardly conscious effort after richness and grace of line. The points of them will need to be nailed down firmly to the door, and for this purpose will be flattened out and pierced in the centre for the bolt. The main strip will also have to be pierced at intervals for attachments to the oaken planks; and if these holes are punched through while the iron is red-hot, the strip will be forced out a little at the sides at each place where they come. From the form thus arrived at, as from a germ, the whole development of the most elaborate of the really good mediæval door-hinges naturally unfolds itself. The subdivision of the material, or the addition to it at intervals, by welding, of corresponding branches: the flattening out of beds where the bolt-heads may conveniently lie; then the evolution from the branches of a beautiful and, it may be, elaborate composition of scroll-work covering the timber with a well-balanced scheme of convolutions; the emergence from the mere flattened bed of the distinct form of a lozenge or quatrefoil or rosette—all this artistic play and movement, the result of which is some lovely mediæval door-hinge, like those at Turvey or Leighton in Bedfordshire, represents the gradual growth of the artist in the workman, under the stimulus of the pliant suggestive material that is under his hand. This is how the art of English ironwork grew up—a thing essentially

of the hammer and punch and anvil—conditioned throughout, first, by the ever-present conditions of use, and next by the ever-present artistic sense of the manipulator, who works out in the direction of beauty every hint which the material and process afford. Of course, like every other phase of industrial art, the craft that has developed into an art in this simple and healthy fashion becomes later on too elaborate. Ornament is forced upon the thing, instead of being suffered to grow out of it. The pride of mere craftsmanship is indulged, and an effort is made to accomplish things which cannot be naturally, and hence easily, done—just as a technical display. New and more elaborate processes are introduced, and the hammer and tongs laid aside as homely things. We reach, in this way, work like the famous hinges on the doors of Notre Dame at Paris, which, wonderful as they are, are yet more suited for cast and chased bronze than for hammered iron, and are not as good models of style as the unpretending English productions. The South Kensington museum has done well in collecting a good many specimens of sound work in this department, but there are simpler bits to be found in country churches up and down the country that are more instructive, as showing the artistic genesis of the work.

What is true of village woodwork and of wrought-iron applies equally to almost every other phase of industrial art. These all begin with the practical demand, and the satisfaction of this by the workman, who becomes an artist without knowing it. They all develop in time in the direction of over-elaboration and technical display, and these often involve a divorce of the artistic effect from the material and process on which it originally depended, and especially an abuse of the naturalistic element in ornament, the besetting sin of the Italians, and the most fertile of all causes of the debasement of style in the industrial arts. The half-timber cottage is commonly perfect in art, on account of its own simple, unpretending artlessness; but the half-timber mansion is often over-enriched and ornamented in the wrong places. Ironwork, as we have just seen, comes to forget its essential nature. Almost all forms of pottery of an unsophisticated kind are good, and are often indescribably beautiful in form,

of the material in enormous conditions of an elaborate and a bit of! In any expensive worst. The details of its system of a rounded mistake in es of figure which is that have not the needs for its these pseudo which people represents an plenty of old tly right in thic tracery *tours-de-force*

the industrial and this is se arts, and money in his nce on the

an assist the ner already h the crafts- one which ay. Hence museum to ay chosen for e craftsman ents of the

miscellaneous museum as a whole, except as a Sunday afternoon's recreation. It might shock him to learn that many of these costly and in some ways attractive objects displayed in the glass cases are not good examples to follow, and represent false artistic aims. He had better be kept away altogether from Ghiberti gates and Wedgwood vases, and florid Italian reliefs, and Gobelins tapestry, and Grinling Gibbons wood-carving, and given nothing to look at that is not pure in style and that does not exhibit that essential relation between artistic effect and material and structure, which is the fundamental principle we should endeavour to enforce. The education of the eye of the worker in form and colour can be greatly helped by well selected exhibits which are really beautiful in shape and hue and texture. Greek vases with their decoration ignored, oriental pottery and textiles, early Flemish (not Gobelins) tapestry, old hammered silver, have such educational value, and the more the worker looks at good examples of the kind the better. But a more direct educational service would be performed by a set of carefully chosen exhibits illustrating the nature of the various materials in use in the industrial arts from the point of view of their artistic capacity. The natural forms assumed by these materials when under manipulation could be made clear, and simple artistic products, such as were turned out of the old village workshops, could be used to show what excellent effects can be gained by merely taking advantage of these natural forms, without any application of ornament, or any other of the receipts for design, familiar in our schools of art. The specimens in question exist, but they are too often passed over alike by dealers and custodians in favour of the established museum article. The other day I came across some carved oaken pews of mediæval date in a country church in Norfolk that were admirable examples of style, far better worth reproduction than the elaborate Flemish stalls at Amiens. A church-door not far off had an iron armature and hinges in which the enrichment was entirely secured by cutting into the original iron strip with a chisel, and tastefully bending out the parts half detached into scrolls. This process can be carried out so effectively that I have seen in a mediæval door-hinge no

fewer than sixteen separate scrolls, each ending in a simple quatrefoil the centre of which was accentuated by a projecting nail-head, all branching out from the original stem, without a single join in the whole piece. These are the sort of things to look out for, and to reproduce in such a practical section of a museum as is here spoken of. The acquisition of these examples would take some time, because only really good things are admissible, and these need some little prying after. Any specimen secured would in the meantime have to be placed in the miscellaneous collection, where it would be buried like the really good things in our museums are buried now; but after a few years of patient work it might be possible to have a portion of the museum, preferably near the outer door, set apart for educational purposes, and furnished with these selected specimens, of which, of course, a proper explanation would be provided. In time it might be possible for the custodians of such a museum to issue little penny handbooks on the specimens exposed, so that the wood-carver might have the wood-book and learn the capabilities and limitations of his material, the smith the iron-book, the chaser the silver-book, and so on. One would like to see separate rooms or compartments for wood, for iron, for sheet metal, for gold, for lead, in which the true capabilities and limitations of each material should be made manifest, while the more general principles of style should be illustrated by exhibits which would show the proper artistic use of such features as the plinth or base, the border, the framing, the cresting; enforce the value of mouldings in composition; and generally give the true principles of the employment of what architects call *features* in distinction from *ornament*.

Finally, everyone who came into a museum thus disposed should have his sense of beauty in form delighted, and hence refined and educated, by one or two reproductions of selected pieces of Greek plastic and decorative work that represent in this department the very perfection of which art is capable.

Mr. BATHER suggested that a reserve or study series for those interested in the industrial development of art would evade the difficulty of exhibiting bad examples to the public.

For the ordinary public it is of more advantage to exhibit ordinary objects, with such simple art forms as can suggest to them the introduction of similar methods in their own homes.

Mr. MACLAUCHLAN said he felt it to be a duty to bear public testimony in Professor Baldwin Brown's presence, as he had on a former occasion when he was absent, of the splendid assistance he had rendered to the Dundee museum when the large collection of sculptural casts was formed. Mainly in consequence of Professor Brown's wise guidance, that collection, if not the largest, which it perhaps is, is certainly the most representative. He felt sure Professor Brown did not mean, as some of the previous speakers supposed, to speak slightly of the sculpture of the renaissance, and Ghiberti also could hardly be omitted from any representation illustrative of the art of that great revival. It was only natural that South Kensington should buy and illustrate the art of far-away countries first. Westminster abbey could be seen on one's way to South Kensington, and the illustration of it and other English art would follow when Parliament provided proper funds, instead of the wholly inadequate sum now given.

The Hull museum publication No. 1, "Notes on Sibbald's Rorqual," by Mr. Thos. Sheppard, curator of the Municipal museum of Hull, has been received. It gives a short description of the skeleton in the Hull museum on which Gray founded his species *Physalus Sibbaldii*, and a summary of all references to this species up to 1896. This paper, which practically embodies all that we know about Sibbald's Rorqual, is on sale at the modest price of one penny. The Hull museum is to be commended on the inauguration of these publications, which will do much to extend the knowledge and usefulness of the institution, and it is to be hoped that this may be the first of a long series of equally useful works.

The Philadelphia Commercial Museum.

BY W. E. HOYLE, M.A., F.R.S.E.

[Extracted from an Address delivered at the Conference on Museums in Glasgow, September 13th, 1901.]

I THINK that I can best serve the purpose of this meeting by dwelling no longer on generalities, but by giving a brief account of an institution which seems to me destined to render important services to the enlightened community which created it, and which impressed me as much as anything I saw on the American Continent, not excepting the Falls of Niagara or the Congress library. I allude to the Commercial museum at Philadelphia.

The Philadelphia museums had their origin in the successful movement to secure the vast exhibits of natural products from the numerous countries represented at the World's Columbian exposition at Chicago, in 1893. These collections were presented to the municipality of Philadelphia, and the good faith of that city was pledged to their proper care. This good faith has been shown by repeated appropriations of large sums of money to ensure their suitable installation, and to promote the development of the work of the institution. From the outset it was recognised that the work, which had thus originated in international co-operation, must be of a national and international character.

The Board of trustees, appointed to be guardians of the property of the museum and to be in immediate charge of the detailed work, was constituted by the highest officials of the state of Pennsylvania and of the city of Philadelphia as members ex-officio, and associated with them a certain number of distinguished individuals especially well fitted for the responsible position. In order to ensure permanence, these appointments were made for life.

Immediately thereafter an advisory board was established, composed of official delegates from the leading commercial bodies of the United States of America and the sister republics. This advisory board holds an annual meeting in the city of Philadelphia, at the buildings of the museum, in the month of

June. It exercises a general supervision over the administration of the museum in order to promote its development and foster the efficiency of its service for the interests of commerce. There is a further diplomatic advisory board, to which all ministers representing foreign nations in America are invited, with the object of ensuring international co-operation.

That the city of Philadelphia was not unmindful of the great opportunity thus placed in its hands is shown by the fact that within the first four years appropriations of no less than 470,000 dollars (nearly £100,000) were made to this museum.

Its objects as set forth by its promoters were :—

“(1) To gather from all parts of the world and to make immediately available to business men full and specific information concerning trade conditions and trade connections.

“(2) To place on exhibition manufactured products from other countries, in order that our manufacturers may be properly informed concerning the requirements of markets which it may be possible for them to enter.

“(3) To bring before the manufacturers, dealers, and consumers of the United States, samples of all the varied products of the world, that they may know and choose such as are useful to them.

“(4) To make complete examinations, analyses, and tests of these products, and to publish such information concerning them as may lead to a general understanding of their usefulness.”

It may be urged that such work might with advantage be left to a chamber of commerce, and does not come within the scope of a museum. The Philadelphia commercial museum, however, by means of its excellent organisation, not only supplies its members, who pay 50 dollars per annum, with the most varied and detailed trade reports, and with any item of special information, but, at the same time, its complete collections present to the visitor an ocular demonstration of every department of commerce. It thus accomplishes all that such a chamber can do, and very much besides.

At the time of my visit (in 1897) the collections were housed in no less than one hundred rooms in temporary premises, but a plot of sixteen acres had been purchased and set apart for a more suitable building.

The objects of the museum are carried out by two separate departments—the scientific department and the bureau of information.

THE SCIENTIFIC DEPARTMENT.

The work of this department is directed toward the collection and exhibition of the world's raw products, and the analysis and examination of all such materials. The exhibits are arranged (1) geographically and (2) monographically, and they are subjected to (3) laboratory tests, whilst (4) there is an exhibit of manufactured articles.

1.—EXHIBITS ARRANGED GEOGRAPHICALLY.

Under this classification a visitor may study the resources and commercial features of any particular country. He can see its products and investigate the character of its industries. He can note the means of transport and so be enabled to derive from the exhibits, maps, charts, and other data collected valuable information necessary in the conduct of his business. That this scheme is planned on no meagre scale may be seen from the fact that a suite of four rooms, for example, is devoted to the products of Mexico; another to those of Argentina, and so on.

2.—EXHIBITS ARRANGED MONOGRAPHICALLY.

Under this classification the manufacturer, merchant, or consumer, interested in any particular commodity, may here find systematically arranged and displayed samples of the various products which interest him. These are brought together from all sections of the globe and are accompanied by all obtainable data whereby he may judge of their commercial value. For instance, the manufacturer using wood finds displayed for his benefit thousands of samples, embracing nearly all the woods of the world in sufficient size and quantity, and with data necessary for him to determine their value in his particular industry. Likewise, the textile manufacturer here finds samples of the wools, silks, cottons, vegetable fibres, &c.,

from every foreign country, comprising the most varied and complete collection of its kind in existence. The collections of hides, skins, leather, tanning materials, dye-stuffs, food products, oils, medicinal drugs and herbs, minerals, &c., are intended to enable the dealers in these products to keep fully posted upon the constantly changing conditions of the markets of the world. These collections are renewed and augmented as the progress of industry may require.

3.—LABORATORIES OF TECHNOLOGY AND TESTS.

These laboratories have for their main object the examination and analysis of raw and manufactured products, which may be sent from any of the countries represented in its collections, or by private individuals who wish to determine through chemical and other tests the commercial value of the materials presented.

4.—EXHIBIT OF MANUFACTURED ARTICLES.

There is also an extensive exhibit of foreign manufactures, which shows samples of merchandise now being sold in foreign countries, especially in the markets of South America, Australia, South Africa, and other promising fields. The object is to show the American manufacturer what his competitors are doing in the foreign trade of these countries, and to suggest to him new lines of goods which he may produce and sell with profit.

The practical value of this department will be at once recognised. The manufacturer of cotton goods, for instance, who is desirous of wider markets for his products, may here find thousands of samples, showing him in the greatest detail the styles of goods which are now being sold. He may inform himself concerning the weights, widths, lengths, and patterns which are in favour. Each sample is accompanied by the manufacturer's price. With this information the American manufacturer is put in a position to judge of any market as to whether it would be worth while for him to attempt to claim a share of its trade. Equal facilities are offered to manufacturers of hardware and cutlery, boots and shoes, hats, caps, woollens, and many other lines of products. Novelties and improvements made by foreign manufacturers in standard

ent additions
of important
ps.

ssary adjunct
organised. A
technical journals
filed; and not
desiring to
look through
principal contents.
from consuls
the present
es of trade in
also arranging
will shortly be
the nature and

at the museum

ed on exhibi-
ad throughout
e. The raw
ng with those
manufacturing
material they
manufactured
they show the
y of the goods
he will have
hing towards
o way acts as
being to show
public institu-
ch aid every
and it is not
nally, it is not
standing and

reliability of foreign houses may be obtained, as this duty belongs to commercial agencies organised for the specific purpose. The museum, in short, is a store of information and not a trading corporation.

In conclusion I wish to point out that you have in Glasgow at this moment an opportunity such as Philadelphia enjoyed in 1893. You have here in your midst a large museum of the products of the whole world, manufactured and artificial, a very large proportion of which could doubtless be secured permanently by judicious management and a little of that canny dealing for which Scotsmen are famous. You will have, I am told, a large surplus as the result of your commercial acumen in the management of this collection, and I, for my part, can scarcely imagine anything more helpful to a great commercial centre like Glasgow than the conversion of this temporary collection into the nucleus of a permanent museum of natural and manufactured economic products.

Mr. Watts, R.A., has written to Mr. Allerdale Grainger, State agent for South Australia, offering to present to the people of the state a portrait of the late Lord Tennyson, whose son is their present governor. The picture will probably be placed in the Adelaide national gallery. The South Australians are also likely to secure a copy of Herkomer's picture of Sir George Grey, which has recently been added to the national collection in England. As governor of South Australia, Sir George exercised great influence for good on the fortunes of the colony.

Mr. Martin at the Royal Commission on the younger son of the department of on the night Moyard, near Godward was and was in laboratory of the path. He and professor to were cross-shore the boat Mr. Watson to reach the was not seen entered the science in 1883, dal. He was professor Hux- professor Howes. a and on the had an English Embryology was secretary specially de- sions dredged mers of the vestigation of sbofin, county kindly natnre, e and services ment of science his premature he closely re- past-president of which will ward in their

MR. EDWARD HEWITT, secretary of the Stockport field club, has been appointed curator of Vernon Park museum, belonging to the corporation of Stockport, in succession to Mr. John Tym, deceased. There were thirty-two candidates for the appointment.

MR. E. ERNEST LOWE, assistant curator of Warrington museum, has been appointed curator of the Plymouth borough museum and art gallery, in succession to Mr. R. A. Buddicom, B.A., F.G.S., resigned. There were over forty applicants for the post. Mr. Lowe is quite a young man, being only twenty-five years of age, but he has been on the staff of the Warrington museum since he was fifteen.

MR. J. E. S. MOORE has been appointed demonstrator in biology at the Royal College of Science, South Kensington, in the room of the late Mr. Martin F. Woodward.

Kew MUSEUM.—The retirement of Mr. John Reader Jackson, A.L.S., for 43 years keeper of the museums of economic botany, Royal Gardens, Kew, removes from official life a well-known authority on economic botany. Mr. Jackson has reached the age limit of the civil service, being in his 65th year. During his long period of service the Kew museums have increased in usefulness and popularity. The museums are especially rich in the products of our Indian Empire, owing to the transference to Kew in 1879 of the whole of the vegetable products contained in the old India museum. Mr. Jackson joined the Kew staff simultaneously with Prof. D. Oliver, F.R.S., who retired from the position of keeper of the herbarium in 1890. To those who have had occasion to consult Mr. Jackson officially he will long be remembered for his courtesy and geniality. He has removed from the neighbourhood of Kew to South Devon, where, it is hoped, he will continue to add to the numerous and instructive articles he has contributed to various publications on economic botany. Mr. Jackson is succeeded by Mr. J. Masters Hillier, assistant to Mr. Jackson for 22 years, and the vacancy caused by Mr. Hillier's promotion has been filled by the appointment of Mr. J. H. Holland, who recently retired from the service of the Niger Coast Protectorate where he was curator of the botanic station at Old Calabar.

BRITISH MUSEUM.—Professor E. C. Stirling, F.R.S., of Adelaide, South Australia, has just been on a visit to England, where he has not only obtained some important additions for the Adelaide museum, but he has been the means of enriching the British museum of natural history with some rare and valuable fossil remains of the giant marsupial, *Diprotodon australis*. There is sufficient material to make a fairly complete reconstruction of the skeleton, which will certainly be of imposing

dimensions, for this huge animal had a skull measuring nearly three feet in length, and was equal to a rhinoceros in total bulk. The remains have been presented to the British museum by the trustees of the Adelaide university museum.

BRITISH MUSEUM.—The geological department of the British museum has recently received the collection of fossils obtained by Dr. C. W. Andrews, one of the officers of the department, during his recent expedition to the Fayum in Egypt. Dr. Andrews was sent on this mission at the request of Captain Lyons, the director of the geological survey of Egypt, in consequence of a reported important discovery of fossil remains of eocene age. The collection consists of a considerable number of bones of mastodon, rhinoceros, crocodiles, &c. Dr. Andrews has made a preliminary report of his examination of some of the more important specimens, from which it is evident that discoveries of very great geological interest have been made. One of the most notable of the finds is that of a mastodon-like animal, which Dr. Andrews believes to be the ancestral form of the proboscidea. If this view is confirmed, the long-standing problem of the place of origin of the mammoth and present day elephant has probably been solved.

EDINBURGH MUSEUM.—In the report of the Board of Education, reference is made to the Edinburgh museum of science and art. After referring to the reconstruction of the cases in the machinery hall and the chemical gallery, and the rearrangement of the ethnographical collection to provide for the accommodation of the collection presented by Sir William Ramsay Fairfax, the director says the geological survey work has included the writing of more than 600 labels. A special collection of rock specimens illustrative of the geology of Arthur's Seat has been commenced. The top gallery of the great natural history hall, containing the series of fossil fishes, has been rebuilt and rendered dust-tight, and the complete re-arrangement of the collection has commenced. Some purchases of importance have been made, including many interesting mammals for the mammalian collection. The number of visitors to the museum during the year was 322,582.

GIFT OF PICTURES TO GLASGOW.—The sum of £8,075 has been left by Mrs. James Rodger, of 5, Park Gardens, Glasgow, to charities in that city. The legacies are payable, free of duty, at Whit-Sunday next. Mrs. Rodger in 1891 distributed £10,000 among the Glasgow infirmaries and various benevolent societies in Glasgow, and in 1893 she made a similar distribution of £3,000. By her settlement Mrs. Rodger bequeathed ten pictures by Horatio M'Culloch to the city of Glasgow, to form part of the collection for the art gallery and museum.

WHITECHAPEL ART EXHIBITION.—The recent exhibitions of pictures at the Whitechapel art gallery have proved so successful that their promoters have decided to make an interesting experiment with a view of further developing a love of art among the inhabitants of the east end of London. During the coming winter months Mr. Charles Aitken, the director of the gallery, will deliver a course of lectures on the development and history of art. The lectures will be illustrated by lantern slides, and will be specially adapted to those who are beginning to study art. Canon Barnett and the education committee of Toynbee hall have placed their lecture hall at the disposal of Mr. Aitken for the purpose. The first course will consist of five lectures on the development of Italian painting at Florence and Siena, and will be followed by a course on the later Florentine and Umbrian art. To add to the educational value of the lectures Mr. Aitken proposes to attend the hall one night a week to advise students and to show photographs and books illustrating the subjects he has dealt with, and to arrange for the lending of framed pictures to those who wish to study pictures at leisure in their own homes.

MUSEUM FORGERIES.—A very curious conference has been recently held in London, which was styled an "international conference of directors and curators of museums," in order to discuss mutual measures of protection against forgeries. It would be interesting to know how many curators and directors of English museums were invited to this conference, whose labours, no doubt, will result in the purification of collections; and it is to be hoped that in future the hall-mark of this great assembly will be so conspicuously placed on all objects offered to museums, that even the most assumptive, as well as the most modest of curators, will alike be saved from the paths of error. It has been proposed, so it is stated, that once a year the directors of the principal museums in Europe shall meet to confer and report confidentially on various matters connected with the question of forgeries which have come within their knowledge. May we all be spared from the necessity of having thus confidentially to discover our errors to others.

STONEHENGE.—The recommendations made by the representatives of the Society of Antiquaries, the Wilts. Archaeological Society, and the Society for the Protection of Ancient Buildings, whom Sir Edmund Antrobus invited to advise him with regard to the preservation of Stonehenge, are now being carried out. Among other things recommended was an examination of the great trilithon, No. 56 (according to the numbering on Professor Flinders Petrie's plan), which was leaning at a dangerous angle, with a view of maintaining it in a position

of safety. The stone has been raised into a perpendicular position without a single hitch, and now presents an imposing appearance. It stands 21 ft. above the ground, its total length being about 29 ft. 6 in., and its estimated weight more than 30 tons. The work has been carried out in the most careful manner under the supervision of Dr. Gowland, F.S.A., who is acting for the learned societies, and Mr. Detmar Blow.

ARMY COLLECTORS.—The appeal made some time ago by Professor Ray Lankester to officers in South Africa to send to the Natural History museum zoological specimens from that part of the world has not been responded to in any great degree, though consignments are occasionally received from officers and men who are sufficiently enthusiastic as naturalists to devote their leisure to the by no means easy task of searching for rare specimens. The late gallant Colonel Vandeleur, whose death a few weeks ago evoked such wide-spread regret, was a constant correspondent of the museum, and sent home several parcels of specimens. He was specially interested in botany, and some of the plants he collected for the botanical department are quite rare and peculiar. A consignment of considerable importance has only lately been received at the Cromwell Road museum from Deelfontein, in Cape Colony, consisting of a number of birds and small mammals, several of which turn out to be of exceptional interest. They were collected by Colonel Sloggett, commandant of the base hospital at Deelfontein, with the assistance of Mr. Seimund, one of the taxidermists of our national museum.

BRITISH ASSOCIATION DELEGATES' CONFERENCE.—At the annual conference of delegates from the various scientific societies of the United Kingdom, which was held in connection with the British Association meeting at Glasgow, the president, Mr. F. W. Rudler, F.G.S., delivered an address on the relationship of local societies to museums. Mr. Rudler's extensive experience in museum work enabled him to speak with authority on his subject. He stated that no museum, no matter how efficiently staffed could work well without the aid of the local natural history societies. Even the most important museums in the country were dependent to a large extent, directly or indirectly, upon the assistance afforded by the field clubs. It was the members of such clubs, and they alone, that could thoroughly explore the ins and outs of a district. The museum should be the headquarters for the collections, and by its publications acquaint the outside world with what it contained. He urged the various societies to assist the museums in their work. We hope to be able to print Mr. Rudler's address in a future issue.

... instruments in the
... to be curiously mis-
... this kind has recently
... man. He was anxious
... asked a meteorological
... In acknowledging the
... thing happened to it. I
... the farm on Friday
... Tuesday I was surprised
... factotum what it was
... ke rain on Sunday he
... fear of it getting wet.

... hairdresser's shop in
... Ash Association for the
... that city before it was

... ed by
... S. (Ed.),
... MASTERS' GUILD,
... ly (*sic.*) kills the

... gical museum at Kiel,
... geological collections
... in Brunswick.

... uff has been appointed
... Dr. F. W. van Eeden,
... to place on record a
... museum for English
... lem museum, Frederick
... em, 26th October, 1829,
... In 1859 he was elected
... for the Development of
... terbevordering van
... l his time and all his
... foundation of the "Colonial
... industrial arts in 1877,
... were the principal fea-
... were erected under the
... and developed through
... personal care of Dr. van
... seums until the time of
... autifully situated in the

Haarlem woods. Particularly in the line of colonial enterprise and development, Van Eeden rendered the most valuable services to his country, and made the Colonial museums at Haarlem well known institutions of great practical value. The descriptive catalogues of the different sections of the Haarlem collections were written by Van Eeden in a masterly manner, and exhibit excellent botanical and economical knowledge. Botany was always the science he loved best. From 1868-1900 he was the sole editor of the "Flora Batava," and he published many botanical papers in the Dutch scientific journals. His little book, entitled "Weeds, Botanical Walks" (Onkruid, Botanische Wandlingen), is known to every scholar of natural history in the Netherlands; a work which has given a great impetus to the practical or field botany of the younger generation. The present director was Dr. Maurits Geshoff, born at the Hague, 11th October, 1862, and is Doctor of chemistry and pharmacist of the universities of Utrecht and Jena. In 1887-1892 he undertook researches of the constituents of Indian plants at the new founded phytochemical and pharmacological laboratory at the botanical garden at Buitenzorg (Java), and continued them in 1893-5 at the national herbarium at Leiden, completing there his work on Indian medicinal and economic plants. In 1895 the position of sub-director of the Haarlem colonial museum was created for him, and also a laboratory built there in order to give him the opportunity of continuing his researches in phytochemistry. In 1896 the Amsterdam university offered him the professorship in pharmacognosy, formerly held by Prof. Oudemam, but Greshoff preferred his duties in Haarlem, and was elected director of the colonial museum, 6th July, 1901. The papers published by him are as follows:—"First and Second Report on the Chemistry of Indian Plants, 1890 and 1898;" "Monography of Poisonous Plants, especially Fish Poisons, Part I. and II., 1893 and 1900;" "Indian Useful Plants, 1894-1900;" "Indian Toxicology, I. and II., 1898-1900."

HOW TO ENRICH A NATIONAL ART GALLERY.—Paris has a high-handed fashion of enriching its art collections. The Church of Nantua possessed Delacroix's "Saint Sebastian," one of the finest religious paintings of the master, and, proud of their treasure, the Nantuans sent the picture to the Paris Exhibition, where it was greatly admired. The show closed, and the work was sent to the ateliers of the Louvre to be cleaned, so said the authorities, but the picture will not again return to Nantua, for the Administration has decided to retain it and to hang it in the Louvre. The masterpiece will certainly have more value in Paris than in Nantua, but it is rather hard on the inhabitants of the provincial town to lose their precious possession in this unceremonious way.

Correspondence.

JOHNS HOPKINS UNIVERSITY,
BALTIMORE, MD., U.S.A.,
SEPTEMBER 11TH, 1901.

To the Editor *Museums Journal*.

Sir,—In your notice in the first number of the *Museums Journal* of the receipt of the second part of my account of the "Jamaican Actinaria," you refer to the desirability of the author of new species informing readers where the type-specimens are to be found. Though I have not done so in the two parts of the paper which have already appeared, such a course had already been determined upon, to appear more fittingly in the third and concluding part of the work.

The subject of the location of type-specimens has been often discussed by museum workers and specialists, but where scientific work is conducted by an institution under such isolated conditions as in the colony of Jamaica, the question has a special importance. An investigator has to consider the loyalty due to the institution in whose time and at whose expense the work has been carried out, as well as the convenience to students in having ready access to the type-specimens. The matter has been discussed by the authorities at the Institute of Jamaica, and in the case of much of my own material has been solved in a manner which should be satisfactory to all. In nearly all the species of Jamaican Actinians I had numerous specimens, and in such a variable group no one example more than another could be considered as the type, especially as very often the external characters are taken from one and the internal anatomy from another. Regarding all the specimens as co-types, they have been distributed as follows:—One set has been presented to the British museum, London; another to the United States national museum, Washington; a third has been deposited in a special case in the museum of the Institute of Jamaica; and a fourth retained by myself. Many specimens have also been sent to other specialists in the same group.

It is not always, however, that the institute has been so fortunate as to possess such a number of co-types of species to which reference has been made in literature. In the case of a bat, *Reithronycterus aphylla*, recently described by Mr. G. S. Miller in the Proc. Acad. Nat. Sc., Philadelphia, 1898, which constituted the type of a new genus and species, the museum authorities, after some consideration, decided to retain the unique specimen, much against the wish of its describer, who desired it to be deposited in the United States national museum. Every effort has been made to secure a second specimen, to be placed where it would be more accessible to workers.

The specimens of Jamaican aboriginal Indian remains, described by me, were considered to find their natural resting place in the local museum.

It has often suggested itself to me whether a closer official connection between our isolated colonial museums and the British museum would not be greatly advantageous to the cause for which such organizations exist. A connection on some such lines is maintained by the Royal gardens, Kew, and the numerous colonial botanical departments, and has proved of enormous advantage in botanical and economic science. In these days of imperialism, a consideration of such a subject may not be altogether fruitless.

I am, &c.,

J. E. DUERDEN.

Co., Ltd.,

of Electric

red Reflectors.

CO., Ltd.,

LONDON, W.

United Kingdom

especially preserved for

to

PLYMOUTH.

SHOULD HAVE

SECTION

AND INTERESTING
LINES.

application to

RENDUM,

CONY, N.

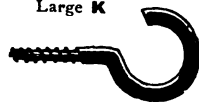
S, Ltd., ESTAB.
1846.
LONDON, E.C.

For Museums or Private Collections.
Supplies to the British Museum, &c.
Any description made to order.
3/6 per gross.
Has a sharp needle point.
In any position in trays or
stands, &c. Altogether one of
the most produced and very cheap.



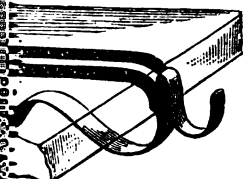
—12/- per gross.
Specimens from edges of glass
wood shelves.
For Cases, &c.
Guaranteed truly tapped, bronzed
(non-corrosive).

Large K



ROSS.

10/- gross.



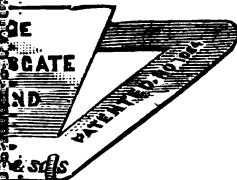
WEL SHLF HOOK.

Specimens from $\frac{1}{4}$ or $\frac{3}{8}$ inch shlf.
per Gross.
Shelves at same price.

THE IMPROVED SENSIBLE
"REVERSED"



Price. 3/- per gross.
Adaptive labels. Having two spikes
rigid when once pressed into
will be sent Free on application.



Gate Stand (Patented)

Descriptive cards at any angle.
by 1 1/2 in. .. 10/- per gross.
by 2 1/2 in. .. 24/-

S, Ltd., ESTAB.
1846.
LONDON, E.C.

Supplies to the British Museum,
Museum, Horniman Museum,
and others.
Catalogues, Illustrations, and Samples, on



No. BT3.
The "Simplex" Shelf Clip.
Holding specimens from $\frac{1}{4}$ or $\frac{3}{8}$ in.
Specially useful for long narrow
labels.
1/6 per doz.; 15/- per Gross.



—Glass-Topped Specimen Boxes.
Lined with white paper inside and black out-
side. As used at the Geological Museum,
London.

Width	Depth	
in. by $\frac{1}{4}$ in.	..	18/- per gross.
in. by $\frac{1}{2}$ in.	..	21/- "
in. by $\frac{3}{4}$ in.	..	24/- "
in. by 1 in.	..	27/- "
in. by 1 1/4 in.	..	31/- "
in. by 1 1/2 in.	..	36/- "
in. by 1 3/4 in.	..	27/- "

Assorted equally .. 27/- "

Prices are quoted. Any other size,
made to order.

Specimen boxes make in the following sizes covered

in. ..	..	24/- per doz.
in. ..	..	30/- "
in. ..	..	36/- "
in. ..	..	42/- "
in. ..	..	48/- "
in. ..	..	60/- "
in. ..	..	72/- "



15.—Neat Cardboard Tray for Specimens.

Length, width, and finish as boxes No. 14,
but are $\frac{1}{2}$ in. high.

2	3	4	5	6
5/-	6/-	7/6	9/-	10/6 per gross

Larger sizes to order.

Cardboard for Mounting or Writing.

Per doz.	
— 24 by 19, 6-sheet cardboard,	2/3
— 24 by 19, 8-sheet cardboard,	2/6
— 24 by 19, 12-sheet cardboard,	3/-
— 24 by 19, stout tinted board,	3/6
— Ivory card, 24 by 19, thick,	4/6
— Ivory card, 24 by 19, medium,	4/-
— Ivory card, 24 by 19, thin,	3/6

At the above sizes at half the prices.

NS, Ltd., ESTAB.
1846.
, LONDON, E.C.
hibition or Private Collections.

BRACKETS,
ES.

cket J.

Standard Bars
Quality and Finish.

es are stocked:—

BRONZED.

10	12 inch.
2/3	2/9 each.
21	21 inch.
6/6	8/6 each.

IRON (Warranted).

10	12 inch.
1/6	1/9 each.
21	24 inch.
4/6	5/6 each.

BASES.

earnestly solicited to
all for many purposes,
impulsory. We quote
FULL VALUE. Packing
dition, carriage paid,

L TAPPED BAR; Brass, Bronzed, 1/- per foot.

not less than 4 feet.

Top Doors

35/-	per foot.
30/-	"
25/-	"
22/6	"

VALUE, 9in. high

Seable Trays.



**14.—Useful Cabinet for private
ectors or Duplicate Specimens.**
wood covered cloth, brass handles.
15 by 12 by 8 (4 drawers) **16/6**
18 by 15 by 20 (5 drawers), **21/-**
20 by 18 by 12 (6 drawers) **25/-**
34 by 20 by 16 (8 drawers), **30/-**

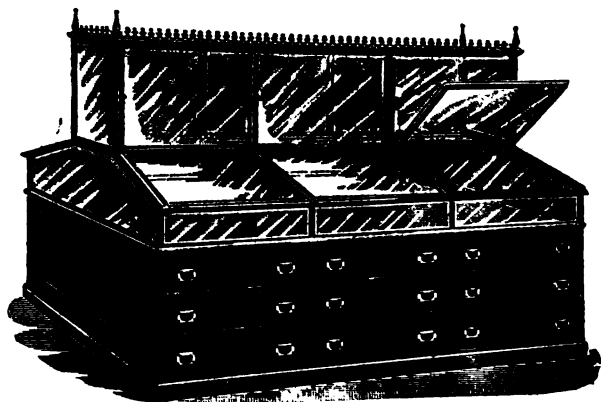
ESTD.
1846.

WM. POTTER & SONS, Ltd.,

ESTD.
1846.

160 & 161, ALDERSGATE ST., LONDON, E.C.

PLATE GLASS CASES, SHOW STANDS, &c., for Exhibition or Private Collections.



No. F 103.—Handsome Mahogany Polished or Mahogany Ebonised Plate-Glass Case.

Admirably adapted for showing museum specimens. The upper portion of Show Case opens on both sides with swinging sashes, the lower is arranged on both sides with lift-up sloping desk sashes furnished with brass quadrants for keeping open, when required. The case is supported on a mahogany table with double panelled and moulded ends, fitted with a full set of mahogany fronted dovetailed drawers, forming altogether a most excellent method of protecting specimens from damage. Instead of drawers, the table portion could be made an additional Show Case, if desired, or to stand on legs.

DIMENSIONS.

Total height, 6ft. 3in. (excluding ornamental iron cresting and finials).

Table Height, 2ft. 9in.; depth, 4ft. 6in.

Total height of Show Case (excluding cresting), 3ft. 6in.

Height of upper part of Show Case, 2ft. 13in.

Depth of upper part of Show Cases, 14 in.

The lower portion of Show Case measures at its highest 15in., and at its lowest 9in.

Bottom of Case is covered with Claret or Blue coloured Cloth. The under part of table is fitted with Drawers, three in height and length, according to dimensions of Case. All Sashes are made on the "air-tight" principle and Glazed Plate Glass.

7ft. by 4ft. 6in. by 6ft. 3in.,

18 Drawers, **£66 10/-**

9ft. by 4ft. 6in. by 6ft., 24

Drawers, **£78 10/-**

12ft. by 4ft. 6in. by 6ft.,

30 Drawers, **£95**

If delivered outside London, an extra charge is made for packing, according to size, varying from £3 upwards.



BT 33.

30/- per gross.
**SPRING CLIP
HOLDER.**
(PATENTED)

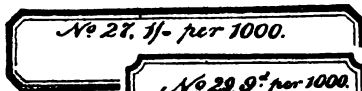
For displaying
specimens on
Trays, Tablets,
Show Cases, &c.
Sample Free.



STEEL R HOOK.

Price 2/6 per gross
For suspending
labels, &c. from rods
wires or
specimens.

**GUMMED LABELS, Extra Quality.
Treble Gummed.**



No 27, 1/- per 1000.

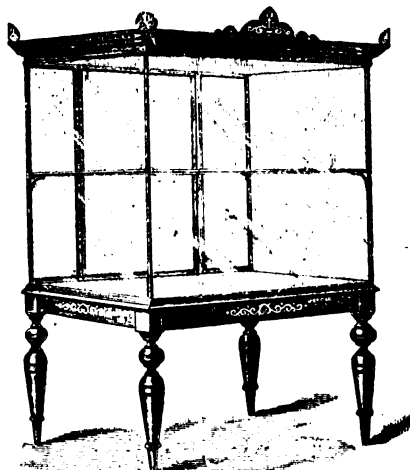
No 29, 8d per 1000.

BLUE BORDERS.



No 30, 6d

50 other Sizes in Stock.

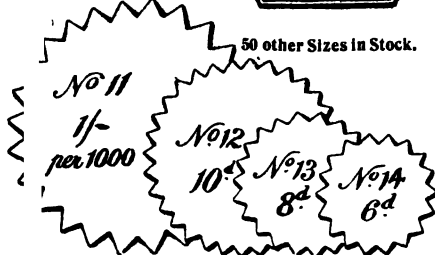


No. 518. Mahogany Plate-Glass Case.

Clear plate glass all round and top, carved pediment. Inside fitted with one full-sized plate-glass shelf, 4 tapped bars and brackets. Splendid case for centre of room.

Height, ins.	Width, ins.	Depth, ins.	A Quality, air-tight.		B Quality, without pedi- ment or inside fittings.	
			ins.	ft.	ins.	ft.
36	36	24	£15	5 0	£9	17 6
36	48	24	18	10 0	12	15 0
36	54	30	21	15 0	15	10 0
48	60	30	25	0 0	18	10 0

Table or Stand for above, 37/6, 57/6 & 72/6 extra.
Glass Show Cases made for all purposes—any size or shape. Estimates and drawings supplied on application.



*No 11
1/-
per 1000*

*No 12
10d*

*No 13
8d*

*No 14
6d*

SPECIMENS

UMS.

CONIFERS.

YCADS,

AMIA,

ENCEPHALARTOS, &c,

FEMALE.

OTHER TIMBERS.

THE TROPICS.

and other media.

ish Fungi.

SPECIMENS.

ARIUM SPECIMENS.

Parasitic Plants.

ECONOMIC PRODUCTS

SPECIMENS.

SPECIAL PRICE LIST.

SON, LIMITED,

stific Department,)

YORK.

R,
ham Hill,

ARMOUR,
ANTIQUITIES.
ON."

months. Each
and is subscribed
description 10/- per

following prices :—

30/-

20/-

25/-

25/-

specimens from all
on approval on

D.

TULLER,

GERMANY.

proposes especially.
shined Face.
etc.

ON APPLICATION.

R.

F.Z.S.,

Collections.

stantly arriving.

Fishes; Lepidoptera,
etc., etc, from all

APPROVAL

kept in Stock.

made up at

WINTER appearance, with en-
k, leaves, flowers and fruit.
ure and growth.
the British Museum; Royal Ar-
an; University College, London;
rpool; Museum of Science and
c. Lists on application.

BROMLEY, KENT.

ASSOCIATION.

F.R.S., D.C.L., L.L.D.
R.G.S. (Sheffield).
Sheffield.

be the promotion of
Museums throughout
better knowledge of
in a different town

less than one guinea
and that individuals
ted as Associates on

by three delegates,
to have one vote.

the Association and
the publications of the

Association be held
ness, the reading of
lating to Museums.

ASSOCIATION.

the Report are nearly
complete sets should
be obtained from the

On the Registration of Type Specimens by Local Scientific Societies.

BY F. W. RUDLER, F.G.S.

ON opening the Conference of Delegates of Corresponding Societies at the Glasgow meeting of the British Association, the Chairman, in the course of some introductory observations, made the following remarks :—

“ It occurs to me that in connection with museums there is one unambitious piece of work which local scientific societies might readily and usefully undertake—work which has already been accomplished to some extent, but not systematically. I allude to the *registration of type specimens*. Every working naturalist has occasion from time to time to realise the difficulty of tracing types and figured specimens. These are scattered far and wide over the country, often in provincial museums, sometimes in private collections, and occasionally coming to light where least expected. It would be no small service to naturalists if it were generally made known where such specimens are located and could be studied. In my opinion the best course is to present the types to the British Museum—our great central treasure-house for all scientific specimens of exceptional value. But in certain cases there will always be more or less objection to this course ; and consequently the next best thing is to preserve the types in some local institution, and let the world know their whereabouts.

“ No doubt this has already been done to a limited extent. Committees of the British Association and other bodies have been appointed to deal with particular groups of types, such as fossils ; but what I am anxious to urge is the importance of prosecuting the work in a systematic manner, and extending it to all departments of natural history.

"So far as concerns the types which are preserved in provincial museums it may probably be said that the work should be done either by the museum itself or by that excellent institution, the Museums Association—an association which has lately increased its usefulness by the issue of a monthly journal, which I may commend to the attention of local societies. It is true that certain of the larger museums have already published, or are now engaged in publishing, lists of their type specimens, at least in certain departments. But most museums fail to possess the means of properly carrying out such work, and could not therefore resent the interference of a local society; nor does a museum usually issue publications in which the lists could appropriately appear and where they would receive adequate attention. Moreover, a local museum could not be expected to take cognisance of specimens in private hands, whereas a committee of the local scientific society could make it its business to seek out all the type specimens within its sphere of influence, whether in the local museum or in private collections, and could give permanence to the information thus acquired by publishing the schedules in its transactions.

"The same kind of research might, in my opinion, be extended with advantage to local antiquities—at least to those of prehistoric age. Each scientific society might fitly publish lists of the antiquities which have been discovered within its own district, and which have been described and figured. Where the specimens remain in private hands it is often difficult, and sometimes impossible, to trace them; but no one is likely to be more successful in the search than the members of the local society. To those who are working at any particular subject it is obviously a great advantage to know where the original specimens are located and where they are probably available for purposes of study. I venture, therefore, to think that the delegates who are now present might urge the societies which they respectively represent to move in the direction which I have indicated."

On the Arranging and Indexing of Scientific Pamphlets in Museum Libraries.

BY E. M. HOLMES, F.L.S.

(Paper read at the Edinburgh Conference, 1901.)

IT will, I think, be generally admitted, that one of the most necessary adjuncts to a museum is a collection of literature relating to the objects it contains, and that the value of such a collection is much enhanced by facility of reference. Such literature is often received in the form of pamphlets, abstracts, reprints, and inaugural theses, which vary exceedingly in size, and are consequently somewhat difficult to arrange for easy reference. Thus papers on the same subject may be in various sizes of octavo or quarto, or more rarely of folio, and on this account may have to be placed in different shelves. When bound together in the form of tracts a long series of volumes accumulates in the course of years, and one finds out only too late, that an arrangement of pamphlets in boxes of various sizes would have been much more convenient, and would have rendered possible a classification of subjects. Although in binding pamphlets one naturally uses an alphabetical arrangement, even this entails a special index of subjects, which must be added to every year, and even then, when working at a particular subject, it may become necessary to refer to twenty or thirty volumes of pamphlets for the information required. But if arranged in boxes labelled alphabetically, time is economised and work facilitated. To affect this, it is necessary to have the pamphlets cut down to as uniform a size as possible.

Sometimes an author contributes papers on the same branch of science or even on the same subject to different journals or publications, which are issued in different sizes, and these cannot therefore be placed together. But if some uniform standard of size could be recommended for pamphlets, reprints, and abstracts this might, perhaps, lessen the difficulty. The following notes are the result of an enquiry how far this might be possible or practicable.

(1st) On examining the size to which it has been necessary in my own library to reduce various pamphlets relating to marine algae published in different countries, for the purpose of binding them into volumes, I find that those without the covers vary from $8\frac{1}{4}$ in. by $5\frac{1}{4}$ in. to 9in. by 6in. for octavos, and from 10in. by 8in. to 12in. by $10\frac{1}{4}$ in. for quartos.

On examining the bound volumes of pamphlets on various articles of materia medica, also from various countries, I find the size they have been reduced to for the purpose of binding is likewise $8\frac{1}{4}$ in. by $5\frac{1}{4}$ in. to 9in. by 6in. for octavos. Quarto is, I believe, rarely used for reprints or pamphlets on this subject. Although many medical and other journals are published in quarto, abstracts from these are usually issued in a smaller form, varying according to the width of column adopted, where there are two or three columns on each page, and according to the size of any illustration given.

Thus in one before me in which the journal is issued in a quarto size of $10\frac{3}{4}$ in. by $8\frac{1}{2}$ in., the reprint is $7\frac{1}{4}$ in. by $4\frac{3}{4}$ in. But this could easily have been printed on larger paper so as to come within the ordinary or larger octavo size.

The question arises, therefore, whether, if a definite standard of octavo and quarto size for pamphlets or scientific subjects could be recommended by the Museums Association as one that would facilitate the classification into subjects and make the arrangement of pamphlets more uniform, and therefore more convenient and useful for reference, it would to some extent be adopted.

The difficulties that stand in the way appear to be as follows:—

- (1st) The large number of sizes of sheets of paper that are used for printing upon;
- (2nd) The necessity for the paper used for covers to be rather larger than that of the pamphlet itself;
- (3rd) The width of the column of print employed;
- (4th) The size of any illustrations that are employed.

I will not at present enter into the details concerning the size of the papers employed, further than to remark that in this country there are eleven or twelve sizes in use, but that a

a few of these sizes can be obtained of almost any quality and price, and are therefore more especially suited for reprints. There are, I believe, the demy, medium, foolscap, and crown. I may here point out that the space occupied by the printed matter on a page does not govern the size of the paper used. It is due to this fact that it is possible to cut down pamphlets and reprints for binding purposes. The use of paper of a larger size does not necessarily mean any difference in the expense nor does the length of the column. It is only alterations made in the column itself, and the necessary resetting of the type for the purpose, that increases the expense.

The usual interspace between the shelves in bookcases is, I find, 10in. and 12in. and the depth usually 9in., but there are some quarto books that require a height of 13in. when bound, and there are a limited number for which 8in. is sufficient.

We have therefore three points to consider—

- (1st) What is the most convenient and most generally useful size for octavo and quarto pamphlets?
- (2nd) What is the size of boxes that will cover the majority of the varying sizes of pamphlets in use at the present time so as to fit in ordinary bookshelves?
- (3rd) What would be the best size to recommend for scientific pamphlets and reprints for the future?

I have already stated that so far as my experience goes, the various octavos in use would come under 9in. by 6in. Allowing a space of $\frac{1}{4}$ in. beyond this for the inside of a box to hold them, and $\frac{1}{2}$ in. for the space occupied by the framework of the box, this would amount to 9 $\frac{1}{4}$ in. in length and 7in. in width, which would come well within the 10in. shelf interspace.

Probably for convenience in handling, an internal depth of 2in. in a box of this size would be most convenient. The box itself needs a few remarks. Experience has shown me that rounded backs are more convenient than square ones, as the latter do not readily allow of insertion of the fingers for removing them from the shelf. The box should not project at top and bottom as in pulling out a box the ends are apt to get injured. Buckram covers are better than cloth for wear, last-

ing about three times as long, and millboard is better than strawboard for firmness, although rather more expensive. I have found it useful to adopt different tints of buckram covers for different subjects. Boxes which have a spring clasp inside waste space. The best fastener I have seen is one which is at the side, and the best form of box to be one which opens entirely at the back and has a slight overlap to exclude dust all round.

Having ascertained the ordinary size of bookshelf space, the limits of size of ordinary octavo publications and the available inside limit of boxes to fit them, it is possible from these data to select papers of those sizes which are obtainable in any quality, and that would be best adapted for scientific pamphlets and reprints. Demy when folded in octavo gives a length of $8\frac{3}{4}$ in. and width of $5\frac{5}{8}$ in., and medium a length of 9 in. and a width of $5\frac{1}{4}$ in. Either of these come within the 9 in. by 6 in. limit, and as a rule pamphlets printed on a larger octavo size can be cut down.

With respect to quarto reprints or abstracts, I find that the same paper, viz., demy, covers the majority of quarto publications, since it folds into pages $11\frac{1}{4}$ in. by $8\frac{3}{4}$ in. But I find that as the *printed matter* in quarto transactions of scientific societies rarely exceeds $9\frac{1}{2}$ in. by $6\frac{1}{2}$ in., and of the plates $11\frac{1}{2}$ in. by $8\frac{1}{2}$ in., it is possible as a rule to bring the bound volumes as well as the boxes within the 12 in. library bookshelf, by the aid of a little judicious trimming of the edges of the pamphlets; or if not most book shelves in recent libraries are moveable, and will allow the addition of one or more inches of space.

I venture to offer the suggestion, therefore, that the use of paper of demy size for reprints of scientific papers folded in either quarto or octavo would be desirable to recommend for the purpose of facilitating arrangement and reference to such papers, for museum workers, and for those who have to consult scientific papers generally.

This would, if adopted, lead to the use of boxes of uniform size, and the possibility of arranging papers in subjects rather than in the miscellaneous manner usually followed.

I must apologise to the Museums Association for bringing before them a subject that affects libraries more than museums,

but I do it on the ground that many museums have special reference libraries, and that I have found an immense saving of time in having cuttings from journals relating to museum objects alphabetically arranged in boxes, each cutting being pasted on paper of uniform size. Such papers can, of course, be made uniform with any size that is best adapted for pamphlets, the demy size being apparently the most convenient, whether folded in octavo or quarto. If, however, it is desirable to intercalate such cuttings with pamphlets, it will be an advantage to paste them on entire, instead of on half, sheets of paper, so that they can be attached to the same file as the pamphlets.

Mr. PLATNAUER recommended the Marlborough case for pamphlets as convenient and fairly dust-proof. The pamphlets can be marked in ink on the face with the shelf mark, and the shelf mark can be put on the back of the outer case.

Mr. BATHER, while fully agreeing with Mr. Holmes that pamphlets for constant reference were more conveniently stored in boxes, considered that that very method did away with the need for uniformity of size. If the box were large enough, all pamphlets would go into it. Of course, everyone with a library would prefer his own pattern of pamphlet box, so it was needless to say that the one adopted by him (the speaker), after some years of experiment, was superior to any other. An illustrated description of this was published in *Science* (Vol. 9, page 720, May 19, 1899). For the arrangement of pamphlets on any one subject, the best arrangement was alphabetical under author's names, and chronological subordinate to that. If it were advisable to have a standard size of paper, then Mr. Holmes had gone the right way to work to find what that size ought to be. He had gone to actual facts. But the results obtained from this method of investigation obviously depended on the facts selected for study. Different conclusions had been reached by a committee of the British Association (Report for 1895, page 77). Another method was to study the evolution number of serials, and by this method yet other results had been obtained by Mr. W. J. McGee (Bull. Phil. Soc., Washington, 9, page 221; 1892). Such investigations had their value, but the speaker did not think it practicable to attempt to impose any size upon publishers. The evolution is subject to laws beyond the control of museum curators.

Hygiene as a Subject for Museum Illustration.

THE growing popularity of the subject of Hygiene and its bearing upon the practical well-being of the individual, the home, and the state, claims from all educationalists, and more particularly from all curators of public museums, more than ordinary attention; and the time has come when museums may with advantage have a section devoted to the subject, which may be made not only a popular one, but one which intimately concerns the public weal.

Being in an advantageous position to judge the feelings of both the public and various authorities on this matter, I am quite confident that nothing is more appreciated than efforts, however simple, to spread the gospel of health, either by lectures, diagrams, models, or collections.

Hardly a day passes (in my experience) without applications for information, complaints of lack of opportunity, or some pious wish being expressed that some means should be adopted to teach the public by direct object lessons on this vital subject.

Now, as I have thought out this question, perhaps more than any of my colleagues, I propose, for the benefit of all who are interested, to set out in the columns of our journal the main lines of a scheme which may be adopted, or improved upon, by any who may be inspired to start new collections, or who may be able to add to present ones.

Assuming, then, that it is desirable to do something to meet the growing demand for knowledge, the first impulse is to ascertain what has already been done, and where can one go for information. Therefore, before entering into details, it is proposed to give a few of the more interesting facts showing the recent development of the movement, but, at the same time its rapid growth from infancy to maturity, a short but vigorous period of activity which promises great things in the future.

It was in 1852 that the Council of the Society of Arts, by sanctioning a proposal by one of its members (Mr. T. Twining), originated the movement by which public attention has

been directed towards hygiene. Early in 1855 a memorial, addressed to Earl Fortescue (then Chairman of the Society of Arts), pointed out, in a first classification of the subject, the lines of study which should be pursued. In the same year a section devoted to hygiene and domestic economy was annexed to the Universal Exhibition in Paris; and, I believe, immediately afterwards Germany, Holland, and Belgium followed suit by establishing collections on the same lines. Up to this time (1856) the movement was largely inspired by one individual, Mr. T. Twining, who spent large sums of money and gave a life of study to its enthusiastic propaganda. One of the directions of his energy was the building and equipping, at his own expense, of a museum at his home (Twickenham), which was intended to be, and was, for a time, a model of what such a museum should be.

This museum was, unfortunately, burned down in 1871, and in that fire the work of years and many bright hopes were destroyed; but during its existence, from 1856 onwards, it was a most useful object-lesson, and the greatest value should be credited to this effort at a time when very few understood the subject.

The subject was now in the air, and a strong interest was aroused in it by the experiences of the Crimean War. Disease in the hospitals of the Crimea was so prevalent that soldiers were dying at the rate of about 80 per cent., when it was determined by the Government to send out a Commission to see what could be done to stop the mortality. This Commission set to work to apply the elementary rules of sanitary science, viz., ventilation and cleanliness, by breaking the windows and letting in fresh air, and thoroughly scavenging the surroundings of these hospitals, and in less than three months the death-rate was reduced from 80 to 20 per cent. This practical demonstration was not lost on the British public or the Government of that day; and, in 1860, the next step, and, perhaps, the greatest, was taken in advance by the founding of a chair of hygiene at the Army Medical School at Netley, and the appointment to that chair of Dr. E. A. Parkes.

This appointment, and the subsequent life-work of Dr. Parkes, laid for Hygiene a foundation which stands to-day as

firm as a rock, and upon which a superstructure has been built by others which is still rising, and which now assumes the proportions of a distinct science.

In 1869 University College endowed a chair of Hygiene, to which Professor W. H. Corfield was elected, and has occupied it ever since, and may be looked upon as the greatest living authority.

Dr. Parkes died in 1876, and in 1879 the museum of hygiene named "The Parkes museum," was founded in memorial of him, and installed in the galleries of University College, London. The Parkes museum thus established outgrew the accommodation at University College, and, after a temporary existence at Conduit Street, found its present home at 74A, Margaret Street, in 1883. In 1886 an amalgamation with the Sanitary Institute gave it new life, and since that time to the present it has been in a growing and improving condition, attracting visitors from all parts of the world, and stands to-day the most complete classified exhibit of practical hygiene in the world.

In many of the larger towns in England exhibitions have been started, principally in connection with medical schools and colleges, and nearly all of these have closely copied the models and arrangements to be seen in the Parkes museum. Now if the Parkes museum were a perfect museum it would be easy to write simply a description of it and say "follow on"; but, unfortunately, this is not the case. It is not a model by any means, and the fact that an appeal is being now made to the country for funds to build and establish a new museum which shall be worthy of the science it represents is sufficient demonstration that the present authorities are not satisfied with it.

Nearly every section in this museum is incomplete, and all are very much cramped for room. A writer in a contemporary, *The Sanitarian*, describes the place as follows:—"Its out-of-the-way position, being jumbled in behind large buildings, and occupying, as it does, the very air-space necessary for the healthy conditions of several dwelling-houses in a neighbourhood not too well ventilated; the way important exhibits are housed in narrow corridors, where it is impossible to take a class of students of more than half-a-dozen; and, finally, the

largest room of the museum is used as a lecture room ; and **this room I have frequently seen over-full and under conditions** so far as the ventilation is concerned, anything but sanitary."

These remarks are not intended to convey the idea of failure, or excite contempt for the Parkes museum, but rather to show the necessity of a new ideal, and I should like to express here my admiration for the suggestive and most ingenious methods adopted to illustrate the subject by extremely interesting and original models, diagrams, and specimens.

I shall often in these remarks be indebted to the inspiration received at this museum, and from its enthusiastic curator, and, though I may suggest other views, I wish, once for all, to say I believe that everything possible has been done under most difficult conditions of limited space and funds.

The largest collection in this country, outside the Parkes museum, and open to the public, is that made by the District Council of Hornsey. This collection may be called an exhibition rather than a museum ; the exhibitors themselves, in the majority of cases, having been allowed to fit up their own exhibits in their own way. This arrangement always leads to much duplication and muddle. But the worst feature about this collection is its inaccessibility ; and now that the novelty has worn off, there is evidence that both the local authorities and the public generally are losing interest in the scheme. The only live thing about it is the technical work which is being carried on by the Middlesex County Council. It is reported that a movement is on foot to remove this collection to the Alexandra Palace.

To sum up these introductory remarks, Hygiene is at present represented by several private collections in connection with medical schools ; by one public collection, which is out of the way, and only intended as an exhibition of some of the branches of sanitary engineering ; and, finally and most completely, by the Parkes museum, which may be considered the only attempt to include the whole subject, and which is both the pioneer and the most complete arrangement yet attempted in this or any other country.

Thus we are led up to this point, that the ground is clear for improvement, and I will proceed in the next paper to give my views as to what a complete museum should be.

D. P. H.

MUSEUM LIGHTING.—Some experts, on behalf of the Berlin industrial museum, have been paying a visit to England for the purpose of inspecting the various systems in use for the electric lighting of public museums and galleries. Their investigations have been confined chiefly, if not entirely, to London, which is rather to be regretted, for some of the provincial towns have systems of their own which have very decided advantages. The system of inverted arc lamps reflecting light from the ceilings at the Manchester museum approaches very near to the proper natural system of lighting, whereby the source of light is not thrust prominently on to the sight of the spectator, while the action of the light is everywhere even. It is to be hoped that the deputation from Berlin will publish the result of their observations and the conclusions arrived at, for the best system of museum lighting for general use has probably not yet been discovered. According to a newspaper report the German experts were most favourably impressed with the lighting of the museum of practical geology in Jermyn Street, and with the experiments now being made at the British museum of natural history, South Kensington. The authorities there, before committing themselves to any system, are trying various methods both with the incandescent and arc lamps, and should with their opportunities evolve the most perfect system.

West Australian Museum Extensions.

On Wednesday, the 24th July, 1901, H.R.H. the Duke of Cornwall and York performed the ceremony of laying the foundation of the eastern wing of the Western Australian museum and art gallery. The royal party, who were cheered on their arrival, were received on a platform erected for the purpose, by the chairman of the museum and art gallery committee (Sir James G. Lee Steere) and Mr. Bernard H. Woodward, the curator. The chairman, in a short speech requesting His Royal Highness to lay the foundation of this wing, which is to consist of two storeys, the lower, a gallery 150 feet in length by 38 wide and 20 high, the upper or art gallery being of the same dimensions, but 25 feet in height, stated that "this being the Western Australian museum, our endeavour has been to make the collections of the flora and fauna of this country as complete as possible, representing other forms by typical examples. Almost all the marsupials indigenous to Western Australia are represented, while out of the 1,300 birds shown in the cases the greater number are natives of this state. They include over 350 different species already. As far as space allows, they are set up with their eggs and their natural surroundings. The natural history specimens now number 28,500, of which 3,200 were added by purchase, exchange, and donation during the past year. The ethnological department contains about 1,500 specimens, mostly Western Australian. The art collections are small in number at present, but amongst the oil paintings are some of the finest that have come to this continent. The collections are much appreciated by the general public, as is shown by the attendance, and are highly serviceable to those engaged in education, the director of technical schools, as well as the teachers in Government and private schools, regularly bringing classes for the purpose of study. The casts in the art gallery are much used by art students. The number of visitors averages about 40,000 per annum. The attendance on Sunday afternoons varies from 200 to 500,

which is high in comparison with the attendance in the mother country, allowing for the difference in population." The huge stone was then lowered to its proper position, and His Royal Highness, after adjusting a spirit level upon it, said:—"Ladies and gentlemen,—I declare this stone to be well and truly laid. I only wish to say it has given me great pleasure to have laid this stone of the new wing of your museum and art gallery." The trowel, square, and gavel, which were presented to His Royal Highness, showed that much exquisite skill had been exercised in their execution. The work was done by Mr. Plaggio, from a design by Mr. F. M. Williams, president of the Western Australian society of arts. After the ceremony their Royal Highnesses were conducted through the museum by the curator (Mr. Bernard H. Woodward, F.G.S.), who found the Duke a close student of birds and a keen admirer of art. His Royal Highness expressed much satisfaction at both the museum and art gallery. It was a coincidence that the late Mr. Bernard Woodward, an uncle of the curator of the Western Australian museum and art gallery, formerly held the position of librarian to her Majesty the late Queen at Windsor. His Royal Highness chatted pleasantly about the galleries at the royal residence, and complimented Mr. Woodward on the condition of the museum. Before their departure, the Duke was presented by Mr. Woodward, and the Duchess by Sir J. Lee Steere, each with an elegantly-bound guide book. Among the illustrations were those of the black and white wren discovered by the collector for the Western Australian museum on Barrow island, which, being the first new Australian bird of the century, had been named *Malurus edouardi* (Camps) in honour of H.M. the King.

Art Gallery Committees and Art.

The following extract from the *Birmingham Gazette* is a delightful illustration of the profound judgment sometimes displayed by a Corporation committee on art matters:—"A number of loyal and patriotic ladies in Wolverhampton subscribed for a bust of Queen Victoria. They next asked that the bust should be placed in the Wolverhampton art gallery. The local art gallery is apparently the most suitable place for works of this character, more especially as the bust in question was an evidence of the town's regard for the Queen. The committee, however, without seeing the bust, or evidently making a single inquiry as to its merits, promptly negatived the proposal. They were then asked the cause of the rejection of the unseen work. To this the chairman, Mr. Laurence W. Hodson, replied that his committee had no desire to disparage the fidelity of the portrait which Mr. Williamson, the sculptor, would produce, and that no doubt 'as work of that sort goes' it would be satisfactory; but, he added, it was 'quite well known that modern busts and statues very rarely achieve any great artistic success.' Therefore this particular work was to be condemned in advance because other work 'of that sort' had not always been satisfactory. But the cream of Mr. Hodson's communication is the following delightful sentence—'Therefore my committee think that it is most desirable that this memorial should be placed in a position where it will be out of the atmosphere of artistic criticism and controversy'—namely, in the new free library. From Mr. Hodson's letter it follows:—(1) That the committee of Wolverhampton art gallery are so clever that they are able to condemn works without seeing them; (2) that they have the greatest contempt for all modern sculptors, and decline to believe that their work—'work of that sort'—is worthy of consideration; (3) that what is too bad for the art gallery is good enough for the new free library; and (4) that the 'atmosphere of artistic criticism' which exists at the art gallery can be found nowhere else in the town, and particularly not in the library. For making these facts clear the citizens of Wolverhampton should be profoundly grateful to Mr. Laurence Hodson."

The Great Auk's Egg.

Mr. J. C. Stevens sold at his auction rooms, King Street, Covent Garden, one of the eggs of the great auk. There was a crowded room. Mr. Stevens said this particular egg was the last of four belonging to the late Baron D'Hamonville, who bought it from the Comte de Brassy, and kept it to the last because it was the best of the four. It was in a perfectly natural condition, and had not been washed or touched in any way. The marks were peculiar, being all of an inky colour. A little soap and water would make it a splendid specimen. In his opinion there was only one better specimen known, which was sold about a year ago for the record price of 315gs. The prices for these eggs had varied from 30gs. some years ago to the record he had just mentioned. There were seventy-three recorded eggs of the great auk, twenty-nine of which were in museums and forty-four in private collections. He frequently received eggs which were supposed to be auk's eggs. One lady sent him three not long ago which proved to be ostrich, emu, and rhea eggs—eggs totally unlike the real thing. Another lady said she had some new laid auk's eggs, which proved to be newly laid eggs of the sparrow hawk. The nearest approach to a great auk's egg in appearance, but not in size, was that of the common guillemot, worth about a penny. The bidding started at 100gs., which after some not particularly brisk competition stopped at 240gs., at which price the egg was knocked down to Mr. Massey, a private gentleman, whom Mr. Stevens said already possessed the record priced and best egg he had ever sold.

New Coins.

Next year will be issued the first coins of the present reign, bearing the head of King Edward VII. As it is more than sixty years since there was a similar issue there will be a big demand on the part of collectors. It was customary during the late reign for the mint to issue "proof"

sets of coins at a price about twenty-five per cent. above their face value, and these sets were equally sought by collectors and museums. It is understood that there will be no proof sets issued next year, so that museums will have to be content with the earliest specimens that they can obtain. Every museum ought to give an order to the mint, through a banker, for a set of the new coins, as already such an enormous number have been ordered that it will be a long time before they can all be supplied. The dies of the Victorian coins will shortly be destroyed, and coins of that era may become scarce, thus making it desirable for museums to secure as complete a series as possible.

General Notes.

AT HOME.

EDINBURGH MUSEUM STAFF.—The appointments mentioned in the "Gazette" include the following:—Scottish Education Department—Alexander Galt, D.Sc., F.R.S., to be keeper in the Technological Department of the Edinburgh Museum of Science and Art. John Crombie, William Stewart Gall, and William Muir Shanks to be sub-inspectors (first-class). Alexander Rodgers and (for service in the Edinburgh Museum of Science and Art) Adam Bryden Steele.

OXFORD MUSEUM.—The new pathological laboratory at the Oxford university museum, which has been erected at a cost of over £10,000, was opened last month.

PROFESSOR W. A. HERDMAN, of university college, Liverpool, will shortly go to Ceylon, to investigate the pearl fisheries. It is understood that he has been entrusted with this scientific mission by the Government of Ceylon on the recommendation of Professor Ray Lankester, the director of the British museum, whose official report on the Ceylon pearl bank, calling attention to their many zoological problems, has been approved of in most of its recommendations by the colonial secretary and the Ceylon Government. Professor Herdman will be absent for several months on this mission, and if Professor Lankester's recommendation be carried out the investigation will last over three years.

BURY ART GALLERY.—A new art gallery has been erected at Bury to contain the extensive and valuable collection of pictures given to that town by the members of the Wrigley family, and chiefly collected by the late Mr. Thomas Wrigley, of Bury. In the same building is included a public library, and these institutions were opened by Lord Derby in October.

PICTURE SALE COMMISSIONS.—It is customary at exhibitions of artists' works in public galleries to charge a certain commission on any pictures sold. A case recently heard in the law courts shows that such commission is not always recoverable. A gentleman had exhibited in the Grafton galleries a picture by Romney, which was sold for £5,500. The managers of the gallery claimed 10 per cent. on the sale, which was refused by the owner, against whom an action was entered. The judge decided in favour of the defendant, on the ground that no contract was entered into for the payment of commission, for although it was stated in the catalogue that a

commission of 10 per cent. would be charged on the price of all pictures sold, yet this rule was not specifically communicated direct to the owner. Art gallery authorities who sell pictures would do well to note this decision.

A SUNDAY SCHOOL MUSEUM.—The Manchester Sunday School Union have made a new departure in the establishment of a loan museum of models and objects likely to be useful to Sunday school teachers, and a shilling illustrated catalogue has just been issued by the honorary curator, Mr. J. R. Ragdale. The museum contains many illustrations of plants and animals mentioned in the Bible. The gods and sacred animals of the Egyptians are largely represented. There are copies of the Rosetta stone, the Lachish tablet, the Moabitestone, and the clay tablets of Babylonia and Assyria. The Shofar horn, the waxed writing tablets, the ancient lamps and hand mirrors are amongst the varied objects, copies of which are to be found in this Sunday school museum. Their judicious exhibition and explanation by the teacher would certainly add to the sense of reality in the reading of the Bible, and make clear some passages that may now be obscure to those unfamiliar with Oriental manners and customs.

NATURE'S WILDS.—In memory of his old friend John Ruskin, Mr. Henry Willett, of Arnold House, Brighton, has made an interesting and valuable gift to the Ashmolean Natural History Society of Oxfordshire. It consists of a piece of ground about five acres in extent, woodland, marsh, bog, and water, and contains many local and rare specimens of animal and vegetable life. It is Mr. Willett's wish that the land should be known as "The Ruskin Plot," and that it shall be kept for all time in its natural condition. In order to ensure this, a trust is being prepared which will vest the plot in the following trustees—the Lord-Lieutenant of Oxfordshire, the Mayor of Oxford, the Vice-Chancellor, the Radcliffe Librarian, the Hope Professor of Zoology, the Sherardian Professor of Botany and the donor. Mr. Willett has done for Oxford what Mr. Walter Rothschild has accomplished for Cambridge in securing for the university a piece of Wicken Fen, the haunt of the swallow-tail butterfly. The ground is situate at Cothill, near Abingdon, Berks, and is not meant so much for collecting purposes as for observation. It is hoped that a systematic record year by year of a piece of ground uninterfered with by cultivation will be of itself of considerable scientific interest.

LIVERPOOL MUSEUM.—It has been found necessary at Liverpool to borrow the sum of £22,000 for the cases required for the new portion of the museum that has been built over the Technical school. The city council to show their prudent

mind have only placed half of this sum at the disposal of the committee at present, and perhaps when they see it wisely expended they may pay over the other half. The discussion of the matter at a recent committee meeting gave rise to some rather reckless criticism, one member remarking "that some years ago attention was called to the chaotic state of the museum, and whenever the matter was called to the attention of the committee or of the council they were assured that something would be done to put the museum in order. The highest authorities on museums had repeatedly called attention to the fact that the permanent collections, priceless almost in value, were so badly arranged that for practical educational purposes they were useless." Criticism of that kind misleads by lack of knowledge, though there can be no doubt that the Liverpool museum has the effect of depressing visitors much more than many other museums do, while at the same time its wealth of valuable material impresses everybody. It totally lacks brightness, both in the building and internal arrangements, the entrance itself, usually dirty, with many loiterers on the outside, being inside clean and dull almost like entering a prison. For specialists and students there is no end of material of the most useful kind, rarities and natural history treasures finding high favour. Yet the public understand not these things, and they want to be attracted to the knowledge they ought to possess. Liverpool has unlimited opportunities for making a real public museum, not simply a storehouse—however well arranged—of scientific treasures, and with the new great extension of building it is to be hoped the opportunity will be used to make a really enjoyable and useful people's museum.

BRITISH MUSEUM CATALOGUE.—An important work has just been completed at the Natural History museum, South Kensington. The fourth and final volume of the catalogue of the collection of fossil fishes in the museum, on which Dr. Arthur Smith Woodward has been engaged for a period extending over at least seventeen years, will shortly be issued. Some idea of the amount of scientific research which a task like Dr. Woodward's entails may be formed when it is stated that in the course of his work the author visited the Syrian protestant college at Beyrout to examine the fine series of cretaceous fishes from Mount Lebanon, the Academy of Munster, the museum of the State university of Kansas, U.S.A., the National museum at Rio de Janeiro, Brazil, the university of Geneva, and the museums of the universities of Munich and Naples. It may be added that the present volume would have appeared early in the spring, but was delayed in consequence of the author's absence for

three months in Greece, where he was engaged in carrying out for the museum the exploration of the tertiary mammalian deposits at Pikermi, near Athens.

SHEFFIELD MUSEUM.—A fine collection of wrought iron work, consisting of gates, grilles, brackets, screens, bell-pulls, as well as locks and keys, and coffrets has been purchased by the Sheffield museum from the sale of the contents of the Chateau de Heeswijk, which was conducted at Hertogenbosch, Holland, from September 24 to October 3. The same museum also acquired several examples of old German silver at this sale, comprising plaques, figures, chalices, &c. This is the third year in which the sale of the Chateau de Heeswijk collections has been going on, and it is probable that two more years will be required to complete the disposal of the collections, the objects still remaining comprising some splendid examples of old glass, pottery, &c.

BRITISH MUSEUM.—The Natural History museum at South Kensington has received from Sir Joseph Fayrer a fine specimen of a porbeagle shark, caught in a herring or mackerel net off the northern part of Skye, between the islands of Crolin and Raasay. The specimen, which is about seven feet long, and weighed 350 lbs., arrived in London in good condition, and is to be mounted for the exhibition gallery of fishes.

VICTORIA AND ALBERT MUSEUM.—Mr. Constantine Ionides, who died a year ago last June, bequeathed to the nation the whole of his notable collection of pictures, drawings, and engravings. He left them to the Victoria and Albert museum, under certain conditions, the chief of which was that the collection was not to be divided nor distributed among the galleries, but exhibited intact. There was some doubt as to whether the bequest could be accepted on these terms, and no official statement has yet been made concerning the decision of the museum authorities in the matter. But all who are interested in pictures and in the development of our national collections will be glad to hear that the Ionides pictures have now been formally accepted for the Victoria and Albert museum, though they may not be exhibited for some time, owing to the great pressure for adequate space in the present buildings at South Kensington. It is to be hoped, however, that we shall not have to wait until the completion of the new museum for the exhibition of the Ionides collection, which contains examples of painters of the French school unrepresented in any of our public galleries—Millet, Ingres, and Degas among others. By Corot, too, there are several pictures; and specimens of Courbet, Lhermitte, Rousseau, and Delacroix. Some of the older masters are also represented—Rembrandt,

Poussin, Terburg, Ruysdael, Le Nain, and Van Goyen; but the French pictures are perhaps the most remarkable portion of a collection made by a man of curiously catholic tastes.

GIFT OF PICTURES TO BIRMINGHAM.—Mr. John Feeney has presented to the art gallery, Birmingham, six very valuable and interesting cartoons by Sir Edward Burne-Jones. These cartoons, each five feet in height, represent King Robert Bruce, David Earl of Huntingdon, Sir William Wallace, Provost Halliburton, George Wishart, and Queen Mary Stuart, and are the original designs for the stained-glass windows in the Dundee free library. Mr. Feeney's gift proves a welcome addition to the already valuable collection of cartoons and drawings by the great Birmingham artist. They are now on view in the art gallery.

DUNDEE'S GOOD FORTUNE.—Mr. Andrew Carnegie, LL.D., has offered to the corporation of Dundee the sum of £37,000, for the purpose of establishing four branch libraries, as well as a central lending library and reading room, on the conditions that Dundee will furnish sites for the branch libraries and levy a rate of twopence in the pound for their efficient maintenance. Mr. Carnegie's offer has been gratefully accepted by the Town Council of Dundee, who acknowledged at the same time, by a special vote of thanks, the valuable services rendered by Mr. John Maclauchlan in obtaining this munificent gift. And Dundee's good fortune does not end there, for a further gift from a generous citizen has been made this month. Mr. Edward Cox has acquired the collection illustrative of the history of Dundee formed by the late Mr. C. A. Lamb, and presented it to the city. This collection numbers 10,000 articles, all illustrative of the civic history of Dundee, in paintings, books, prints, pamphlets, and other articles.

ABROAD.

APPOINTMENTS.

Dr. Arthur Willey of Cambridge, as director of the Colombo museum, Ceylon.

Mr. Lionel de Niceville as entomological assistant in the Indian museum, Calcutta.

Dr. T. W. Hazen, formerly teacher of botany in the Columbia University of New York, as director of the Fairbanks museum of natural science, St. Johnsburg, Vermont.

Dr. L. P. Gratacup as curator of the mineralogical department of the American museum of natural history.

Dr. J. Boetun as keeper of the geological institute and school of mines, Berlin.

Dr. E. Gilg as keeper of the botanical museum, Berlin.

Mr. Willy Toy, previously assistant in the zoological-ethnographical museum in Dresden, as director of the new ethnographical museum in Cologne.

Mr. J. F. Snellman as director of the city museum of ethnology in Leiden.

Dr. A. Zahlbrucher as keeper of the botanical department of the Royal natural history museum; and Dr. A. Penther as assistant in the zoological museum, Vienna.

DEATHS.

The death is recorded of Mr. A. W. Ridgway assistant in the department of ornithology in the Field Columbian museum, Chicago.

The very valuable collection of Marine Algæ of the late Professor J. G. Agardh the "*facile princeps*" of European algologists, who died on January 18th last, remains in the University of Lund, where it was placed by Dr. Agardh in 1895. During his life he retained the privilege of lending specimens, but expressed the wish that no specimen should leave the museum after his death.

The collection of minerals and meteorites, formed by Mr. C. S. Bement, has been acquired by the American museum of natural history in New York.

The collection of exotic mosses, consisting of 14,800 specimens, and hepaticæ comprising 3500 specimens, and containing many types, belonging to Mr. E. Bescherelle, has been acquired by the British museum.

CLUNY MUSEUM.—Three headless apostles in French statuary of the 13th century have long been amongst the treasures of the musée de Cluny in Paris, and the beauty of the work made the feeling of regret for their mutilation especially keen, though there seemed small prospect of ever restoring them. But the unexpected sometimes happens, even to the replacing of a head after decapitation, and it has fortunately been exemplified here, for the three missing heads have been discovered in the studio of the late Geoffroy Dechaume, whose son has returned them to their rightful proprietors.

LAW AND ART.—In Italy there is a law giving to Government the right of pre-emption in the case of the sale of old

works of art, and it is required that notice of an intended sale shall be given to the Italian Art Department. Several eminent personages in that country have at various times been proceeded against for ignoring the provisions of this law, and now another prosecution is instituted against Prince Barberini for having sold to the Louvre an ivory registry and a triptych. These were sold in an indirect manner, and nothing would have been known as to the original owner had it not been for the publication of a catalogue in which it is stated that these objects were once the property of the Barberini family. Prince Barberini will probably think that museum catalogues are not invariably desirable publications.

Workmen recently engaged in repairing a drain in Shader-el-Batih Street, Alexandria, excavated a black granite block of large dimensions and covered with twenty-eight columns of hieroglyphic inscriptions. According to Dr. Botti, the conservator of the Alexandria museum, the block dates back to the Ptolemaic period, and formed the base of a statue of a group of three figures.

HAMBURG MUSEUM.—The Victoria and Albert museum is not the only institution which has become possessed of a collection of examples of modern applied art selected from the remarkable display shown in Paris last year. In the Hamburg museum für Kunst und Gewerbe is now to be found a room devoted entirely to new furniture and decoration. The director of the museum, Dr. Justus Brinckmann, went to Paris with a plan of the room he proposed to set apart for the purpose, and he bought each object with a careful regard to its future setting and as a portion of the complete equipment of an apartment. It thus represents a result which might be attained by any wealthy man whose taste led him exclusively towards the products of the early twentieth century; and so will always possess a definite historical value as a whole, as well as that appertaining to the merits of its details. In the collection at South Kensington British products were naturally not in evidence, the special purpose of it being to show what foreign craftsmen were doing. But at Hamburg one would have expected our own portion of the movement to have been represented more adequately. That this is not the case is due, not to a lack of appreciation of the work done over here, but to the fact that it had so poor a show in Paris. As it is, the most conspicuous object of British workmanship is a large Morris tapestry, "The Adoration," designed by Sir E. Burne-Jones, and made at Merton. Curiously enough, this does not seem very much out of place among surroundings which would certainly have moved William Morris to wrath unspeakable.

There is also a copy of the Kelmscott "Chaucer," and examples of bookbinding by Zaehnsdorf, the Oxford University Press, and Mr. Cobden Sanderson. On the walls are the original of a drawing by Steinlen made for *Gil Blas Illustré*, colour-prints by Rivière, Otto Eckmann, and Peter Behrens, of Munich, and Henriette Hahn, of Paris, as well as an etching in colours by E. Voruz, also of Paris. The work of the two last-named ladies has much originality, and has not been seen in this country. The chief attractions of the Hamburg museum, however, are its collections of Japanese art, of pottery, and of old furniture. In the beautiful carved wood-work of North Germany and Scandinavia it is especially rich, and possesses a larger number of the old Hamburg blue-and-white glazed earthenware stoves than any other institution—which, indeed, is as it should be. These are now very rare and costly; for in technique and decoration they far surpass other German wares of the kind, or even delft. It is doubtful if there is a single example of the first quality in any public collection in Great Britain.

MUSÉE DE SÈVRES.—The administration of the Musée de Sèvres, not content with the great transformation made in the grand saloon, is about to reconstruct the interiors of the various sale-rooms, which at present resemble an ordinary potter's shop. There will be introduced new glass-covered cupboards, independent cases, and pedestals made of Sèvres ware and of iron, which will make the museum more attractive.

A VICTOR HUGO MUSEUM.—Mr. Georges Cain, the curator of the Musée Carnavalet, is preparing in one of the rooms of this museum, on the Place des Vosges, the installation of the Victor Hugo museum. Among the many interesting souvenirs of the great poet (says the *Builder*) will be the curious collection of wood panels sculptured by Victor Hugo when living at Jersey, and painted by him in bright colours, somewhat in the spirit of Japanese art. The panels, of which there are a very large number—covered the walls of the poet's study at Jersey, and will now be arranged in wall panelling around the new room at Carnavalet.

THE AUSTRALIAN ORNITHOLOGISTS' UNION has been established for the advancement of the science of ornithology, the protection of the useful and ornamental avifauna, and the publication of a magazine to be called the "Emu." The annual meeting is to be held in October in the capital of one of the states. Adelaide has been selected for this spring.

AUSTRALIAN ORNITHOLOGY.—The publication of "Nests and Eggs of Australian Birds," by A. J. Campbell, 8vo,

pp. 1102, illustrated with map, 28 coloured plates, and 131 photographs (Pawson and Brailsford, Sheffield), adds a most valuable book to our library, for it contains the record of fifteen years' work and observations. We shall publish a full notice later.

AUSTRALIAN GEOLOGY.—In reference to the paragraph in the July number remarking upon the insufficient accommodation provided for the Government geologist (Mr. A. Gibb Maitland) of Western Australia, it is satisfactory to be able to record that the Government of that State have had plans drawn up for commodious offices for the geological department, which are to be built on the museum plot of land, and will have communication with the geological gallery, so that the specimens collected by Mr. Maitland may be arranged with those of his predecessors, and at the same time be under his immediate supervision. This centralisation will be a great convenience to the public. The offices are included in the designs for the new wing of the Western Australian museum and art gallery, of which His Royal Highness the Duke of Cornwall and York laid the foundation stone on the 24th July last.

ORIENTAL EXPLORATION.—Mr. Leonard King, of the Assyrian department in the British museum, has just started upon a journey through Asia Minor, in the course of which he will specially inspect the mounds at Konyunjik, which from very early days tradition has pointed to as the site of part of the great city of Nineveh. The museum possesses certain concessions from the Porte to carry on excavations at Konyunjik, and on another mount called Nebi Gunus, the reputed burial place of the prophet Jonah. It was here that great discoveries resulted from the excavations made in 1845 by Sir Henry Layard, and in later years by Sir Henry Rawlinson and Mr. George Smith. Not much has been done in recent days in the way of excavations; but the interests of the museum in the site have been conserved, and Mr. King will be able to report as to the condition of the ruins and the prospects of good results being obtained were explorations to be renewed.

SIBERIAN ARCHÆOLOGY.—A valuable archæological find has just been made near the ancient town of Novgorod, in the province of that name, on the banks of Lake Ilmen. The articles found include hundreds of flint arrowheads, spear-heads, axeheads of slate, flint fish-hooks, and an enormous mass of crockery and similar fragments, ornamented in the same style as those found previously in other parts of the same province. The discovery has been made by M.

Perenolsky, of the St. Petersburg University, a son of the archæologist who originally studied this province, and always insisted upon the existence in the neighbourhood of Lake Ilmen of a numerous population during the Stone Age, a theory which thus receives satisfactory proof. The articles found are all of one class and date, indicating the existence of a considerable tribe, which must have either been wiped out or have migrated to other regions before attaining any higher stage of culture than that of the Stone Age.

NILE FISHES.—Mr. W. S. Loat, the superintendent of the Survey of the Fishes of the Nile, has returned to Egypt to continue the work. It is proposed during the ensuing season to explore the Blue Nile from its junction with the White Nile to Rosaires, and even further if the steamer can ascend the river. On completion of this river, Mr. Loat's instructions are to ascend the White Nile from Fashoda to Gondokoro, in Uganda, establishing fishing stations on his way up. A Government steamer has been placed at his disposal for the survey, and it is expected she will be able to make her way through what remains of the sudd to Gondokoro. The fishes when caught are placed in spirit, in hermetically sealed tanks, and sent down to Cairo, whence they are forwarded to London, to be examined and described at the natural history branch of the British museum. The specimens are subsequently divided between that institution and the museum of the school of medicine at Cairo.

PICTURES AND BEER.—Dr. Carl Jacobsen, who is not only the proprietor of the largest brewery in Denmark but also a well-known patron of art, has instituted a fund for the promotion of art in Denmark, endowing it with two-thirds of the annual income from his brewery, or about £15,000 a year. After the year 1951 the fund is to receive the whole of the profits of the brewery. May the consumption of good ale continue abundantly to the cultivation of fine art. Rather a curious combination, but, perhaps, better than "Beer and Bible."

THE MUSÉE GALLIERA opened some months back with an exhibition of industrial art, which has been a great success. Many working men and lads have contributed works of remarkable ability, and the artists have expressed their thanks to the directors for the great opportunity afforded them for showing their craftsmanship. This exhibition will be followed by others, for it is necessary that a city so artistic as Paris should have a permanent gallery where its clever ouvriers may exhibit the results of their many-sided art.

FABRICATED MSS.—During an expedition to Kashgar, the capital of Chinese Turkestan, for the purpose of exploring certain sites for ruins of temples and Buddhist manuscripts, Dr. M. A. Stein, of the Indian education service, brought to light a cleverly planned and extensive trade in fabricated manuscripts, many of which have been acquired by European governments. Islam Akhun, a young man in the Khotan district, was locally credited with having established a factory for the production of "ancient" documents. To Dr. Stein he made a clean breast of the matter. His procedure was ingenious. To give an ancient appearance to the modern Khotan paper, he soaked it in a solution which turned it yellow. The blocks were then printed upon it. The printed sheets were then hung up in the chimneys to be smoked, and finally buried for some time in the sand. Islam Akhun subsequently turned medicine man, and produced to the ignorant hillmen his "credentials," which were found to consist of a Swedish newspaper of 1897, containing the picture of a Swedish missionary in China which he said he had "sat for."

ARCHÆOLOGICAL COLLECTIONS made by Dr. Stein, which were expensive and important, have found a safe resting place in the British Museum, where he is arranging them.

THE CAUCASIAN MUSEUM OF TIFLIS will be known to our readers from the full description published in the Report of the Museums Association for 1898 (pp. 175-183). The *Bericht* for 1900, recently issued, shows that most of the energy of the director and his staff was absorbed by the Paris Exhibition, where, as visitors will remember, the Caucasian section was of conspicuous merit and interest. This museum is now occupied in publishing a catalogue of its collections, in Russian and German, under the title "Die Sammlungen des Kaukasischen Museums." Volume I., dealing with the zoological collections, by the director, Dr. G. Radde, was issued in 1899, and Volume III., Geology, by Professor N. I. Lebedew, has just reached England. The latter will be of use to those studying the rocks or fossils of the Caucasus, as they will learn from it what material is accessible; and they may remember that Dr. Radde is always anxious to enter into relations with specialists competent to work up his collections. The *Bericht* announces that Volume II., dealing with the botanical collections, is nearly ready, and a list of the Herbaria is given. Volume IV. will comprise Ethnology, and the fifth volume, on Archaeology, has been entrusted to the able hands of the Countess Uwarow.

MR. A. ST. JOHN MILDMAI, who is spending the winter at 430, West Tenth Street, Sioux Falls, South Dakota, U.S.A., informs us that the wonderful forest of agatized wood in Arizona has been turned by the United States government into a national park, and all further quarrying forbidden. The company formed to work and polish this fossil wood is therefore wound up and its stock is being sold off. Mr. Mildmay is in a position to obtain the pick of this stock at a cheaper rate than it could be purchased from dealers further east, and he offers his services to the museums of his own country to select and forward such samples as they may require, from a large section of a trunk weighing over one and a-half tons down to hand specimens, either polished or in the rough. We can recommend our readers to accept Mr. Mildmay's offer, and the sooner the better, since such an opportunity will not occur again.

ACCLIMATISING ANIMALS.—The eland is to be introduced from South Africa into the scrub districts of Australia, which do not serve as pasture for ordinary stock. The eland, however, is used to the same kind of diet on the veldt, where his manners have proved unexceptionable and his meat delicious.

The September number of *St. Nicholas* contains an article by Albert Bigelow Paine, on the children's room at the Smithsonian Institution, which has been designed and carried out by the secretary, Dr. S. P. Langley. This room is intended for the benefit of little children. It has been made bright and attractive, and the specimens and pictures are arranged on low shelves, so that the youngest child can see them easily. There are no labels with long, Latin names, everything is clearly and simply described in English. In the centre of the room are aquaria, and gilt cages containing song-birds, and all round the walls, above the cases, are life-like pictures of birds and beasts. The cases contain collections described thus:—"Largest and smallest Birds of Prey;" "Curious Birds;" "Bright-coloured Birds;" "Birds with curious Nests and Eggs;" "Pretty Shells;" "Strange Insects;" "Corals and Sponges;" "Minerals and Fossils;" and one labelled "How Creatures Hide," contains a series of instances of protective mimicry. Dr. Langley thoroughly realises the importance of awakening the interest of children in Natural History by making of it an entertainment, not a lesson, and he is strongly of opinion that there can be no better way of laying a foundation for more serious study later on. The Smithsonian Institution has set an example that might well be widely followed.

Museum Reports.

CARDIFF MUSEUM.

The report of the County-Borough of Cardiff museum and art gallery shews that private munificence is not quite a lost art, as the executors of the late James Pyke Thompson have given £6000 for the erection of a fine art gallery. The committee has made a grant towards the excavations on the site of a Roman camp at Gelligaer, near Hengoed, the results of which will be awaited with interest, as "finds" in other localities have been treated as treasure-trove and claimed by the Crown, which in these cases means the British museum. Many important additions have been made to the museum, of which a full description is given by the curator in an appendix. This plan strikes us as being of particular service not only to the public, but to other curators, and might be advantageously adopted more generally. The list of Ceramics, chiefly Nantgarw and Swansea, and of pre-historic objects, is calculated to make less fortunate curators envious.

We also note that, jointly with Penarth, a journal called, rather comprehensively, "The Public Library Journal," is issued quarterly, at an annual subscription of eightpence.

The report concludes with a form of bequest, which it is to be hoped will be largely adopted.

PARKES MUSEUM.

[Sanitary Institute.] The report opens with a description of the objects of the museum, which is to serve as a means for the practical demonstration and teaching of sanitary science, and which, as such, is of immense value to the medical profession and those engaged in public health work. The report consists chiefly of admirable illustrations of the museum, with short explanatory letterpress, from which a good idea of its purpose and extent may be gathered. Like most museums, it is stated to be overcrowded with material, but a new building is in contemplation.

RUSKIN MUSEUM.

The annual report is a very encouraging one. The number of visitors for the year being 38,067, an increase of 3,479, and still more noteworthy is the increase of students in the library and print department. The curator has compiled a really valuable handbook to the collection, illustrated, price threepence. An account is given of the visit of the Ruskin Union to Sheffield. Altogether, Mr. Gill Parker is to be congratulated on the marked progress and success of the museum.

Hull Museum Publication No. 3 contains a description of various objects of interest, chiefly antiquities, recently added to the museum. These objects are for the most part found in Hull, or in its immediate neighbourhood. The Hull museum authorities take no narrow view of archæology; they conserve *potential* as well as *actual* antiquities. Too often collectors attach value only to such objects as are already venerable from their age, and thus lose sight of many obsolete implements of recent date which will in a few years become unobtainable. In these days of rapid progress we may live to see objects in common use in our younger days as extinct as the Dodo. This publication also records the giving of one or two private collections to the museum; a practice which cannot be too strongly recommended. The Russell collection of insects, which is among these donations, is a most important addition to the museum. This little pamphlet is handy in form, very cheap (one penny), pleasantly written, and effectively illustrated.

Some Labels from the Cardiff Museum.

"The paintings (consisting of natural flowers frequently rendered with charming delicacy and artistic feeling) of these pieces, which are mostly SWANSEA, are by several artists, but they have the impress of a common influence. William Billingsley, William Pollard, and possibly Henry Morris, are all represented; but the less artistic decorations are probably the work of learners. The case illustrates Swansea porcelain in its highest and most characteristic phase; in both paste, form, and decoration."

"The contents of this case are selected to show the chief characteristics of WORCESTER porcelain at different periods of its history, and to indicate by means of illustrative pieces from other factories the sources of its forms and decorations. For a description and particulars, consult the special guide book to this selection, which may be obtained from the attendants. Price three-pence. [This collection is lent by Mr. R. Drane, of Cardiff.]"

"Examples of forgeries of NANTGARW and SWANSEA porcelain; old pieces from other factories which have received forged marks so that they should pass as genuine; genuine pieces which have received *recent* decorations so as to enhance their value; eccentricities, etc."

"These varied examples of SWANSEA Porcelain give a general idea of the better-class products of that old Welsh factory, in both paste, form, and decoration. The paintings are by various artists, among whom W. W. Young is well represented by his literal transcripts of flowers—which are perhaps more suggestive of the pages of a botanical work than the decoration of porcelain—at the bottom of the case. *For a more characteristic phase of Swansea work see another glass case in this room.*"

"The paintings of these pieces (mostly NANTGARW) have a marked style of their own. They exhibit, as a rule, great breadth and richness, and are the work of either William Billingsley or Thomas Pardoe, but *which*, is scarcely settled as yet. The execution of some, however, is so careless that possibly these are not by the same artist. [Note a cup-and-saucer, undoubtedly by Pardoe, in this case, and a plate and cup, undoubtedly by Billingsley, in the next case.] *See also the framed drawings in this room.*"

"These have been attributed to NANTGARW and SWANSEA, but are more or less doubtful. Some of the pieces resemble those porcelains, and *may* be genuine; others are more doubtful; and others again are almost certainly the products of other factories of the same period."

"Old Natural Surface."

"Roman Earthen Ramp (Conjectural outline)."

EXCHANGE AND SALE COLUMN.

FOR SALE.

HEPATICAE.—A complete set of Pearson's Fasciculi of British Hepaticæ (4 vols.) at published price.—H., Ruthven, Sevenoaks.

MARINE ALGAE FASCICULI.—1-4 of Holmes Algae Britannicæ Rariores, at published price; complete set (Fasel 10), not now obtainable, only 25 of each were issued.—H., Ruthven, Sevenoaks.

MARINE AND FRESHWATER ALGAE.—A large and beautifully mounted collection of British and foreign algae, comprising over 12,000 specimens, and including fasciculi of Cruan, Griffiths, Harvey, Holmes, Le Jolis, and Welwitsch, and authentic specimens from Agardh, Bornet, Farlow, Fostie, Kjellman, Nordstedt, and others.—For price and other particulars apply to H., Ruthven, Sevenoaks.

FRANK SUTER & Co., Ltd.,

. . Electrical Engineers, . .

Designers and Manufacturers of Electric
Light Fittings.

SPECIALITY :

Picture and Museum Case Lighting . .

. . By Suter's Registered Reflectors.

FRANK SUTER & CO., Ltd.,

66, BERNERS STREET,

. . LONDON, W.

Marine Biological Association of the United Kingdom.

Specimens of **MARINE ANIMALS** and **PLANTS** specially preserved for Museum purposes. For detailed Lists and Prices apply to

THE DIRECTOR, BIOLOGICAL LABORATORY, PLYMOUTH

W. & A. GENTS, Ltd., ESTAB.
1846.
LONDON, E.C.

Museums or Private Collections.
Supplies to the British Museum, &c.
of any description made to order.

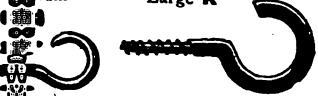
(Patented). 3/6 per gross.
It has a sharp needle point,
in any position in trays or
stands, &c. Altogether one of
the most introduced and very cheap.



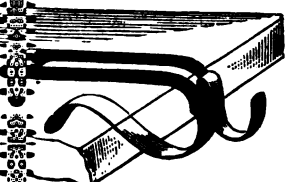
3.-12/- per gross.
Holding specimens from edges of glass
or wood shelves.

Hooks for Cases, &c.
Guaranteed truly tapped, bronzed
(non-corrosive).

Medium Large K



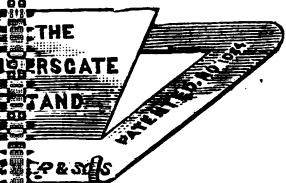
gross. 10/- gross.



STEEL SHELF HOOK.
Specimens from $\frac{1}{2}$ or $\frac{3}{8}$ inch shelf.
10/- per Gross.
Shelves at same price.



Price, 3/- per gross.
Descriptive labels. Having two spikes
which are rigid when once pressed into
the surface.
Will be sent Free on application.



Orsgate Stand (Patented)
Holding descriptive cards at any angle.
In. by $1\frac{1}{2}$ in. .. 10/- per gross.
In. by $2\frac{1}{2}$ in. .. 24/-

Ltd., ESTAB.
1846.

LONDON, E.C.

tries to the British Museum,
um, Horniman Museum.

s.
Illustrations, and Samples, on



No. BT3.

"Simplex" Shelf Clip.

ing specimens from $\frac{1}{4}$ or $\frac{3}{8}$ in.
specially useful for long narrow
labels.

per doz.; 15/- per Gross.



Glass-Topped Specimen Boxes.

White paper inside and black out-
side used at the Geological Museum,

Depth.	
by $\frac{1}{4}$ in. ..	18/- per gross.
by $\frac{1}{2}$ in. ..	21/- "
by $\frac{3}{4}$ in. ..	24/- "
by 1 in. ..	27/- "
by $1\frac{1}{4}$ in. ..	31/- "
by 1 $\frac{1}{2}$ in. ..	36/- "
by 2 in. ..	27/- "

orted equally ..
Prices are quoted. Any other size,
to order.

ke in the following sizes covered

n. ...	24/- per doz.
n. ...	30/- "
n. ...	36/- "
n. ...	42/- "
n. ...	48/- "
n. ...	60/- "
n. ...	72/- "



**Neat Cardboard Tray for
Specimens.**

width, and finish as boxes No. 14,
but are $\frac{1}{2}$ in. high.

3	4	5	6
6/-	7/6	9/-	10/6 per gross

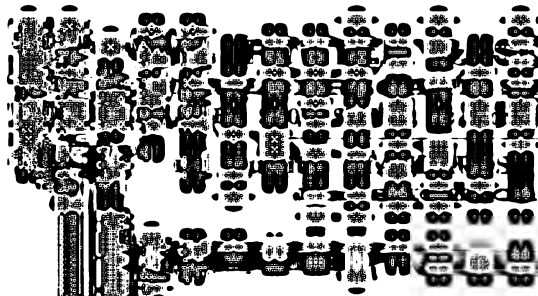
Larger sizes to order

Card for Mounting or Writing.

Per doz.

by 19, 6-sheet cardboard,	2/3
by 19, 8-sheet cardboard,	2/6
by 19, 12-sheet cardboard,	3/-
by 19, stout tinted board,	3/6
very card, 24 by 19, thick,	4/6
very card, 24 by 19, medium,	4/-
very card, 24 by 19, thin,	3/6

above sizes at half the prices.



NS, Ltd., ESTAB.
1846.
LONDON, E.C.
Exhibition or Private Collections.

& BRACKETS,
LOCKS.

Bracket J.

Standard Bars
Quality and Finish.

Sizes are stocked :-

BRONZED.

10	12 inch.
2/3	2/9 each.
21	24 inch.
6/6	3/6 each.

IRON (Warranted).

10	12 inch.
1/6	1/9 each.
21	24 inch.
4/6	5/6 each.

CASES.

earnestly solicited to
sell for many purposes,
compulsory. We quote
FULL VALUE. Packing
condition, carriage paid,

L TAPPED BAR; Brass, Bronzed, 1/- per foot.



not less than 4 feet.

Drop Doors

AND VALUE, gin. high

weable Trays.

35/-	per foot.
30/-	"
25/-	"
22/6	"



14.—Useful Cabinet for private

Factors or Duplicate Specimens.

that wood covered cloth, brass handles.

15 by 12 by 8 (4 drawers)	16/6
18 by 15 by 20 (5 drawers)	21/-
20 by 18 by 12 (6 drawers)	25/-
34 by 20 by 16 (8 drawers)	30/-

Ltd., BSTD.
1846.

LONDON, E.C.

For Private Collections.

DIMENSIONS.

Total height, 6ft. 3in. (excluding ornamental iron cresting and finials).

Table Height, 2ft. 9in.; depth, 4ft. 6in.

Total height of Show Case (excluding cresting), 3ft. 6in.

Height of upper part of Show Case, 2ft. 13in.

Depth of upper part of Show Cases, 14 in.

The lower portion of Show Case measures at its highest 15in. and at its lowest 9in.

Bottom of Case is covered with Claret or Blue coloured Cloth. The under part of table is fitted with Drawers, three in height and length, according to dimensions of Case. All Saabes are made on the "air-tight" principle and Glazed Plate Glass.

7ft. by 4ft. 6in. by 6ft. 3in., 18 Drawers, **£66 10/-**

9ft. by 4ft. 6in. by 6ft. 3in., 24 Drawers, **£78 10/-**

12ft. by 4ft. 6in. by 6ft. 3in., 30 Drawers, **£95**

If delivered outside London, an extra charge is made for packing, according to size, varying from £3 upwards.



any Plate-Glass Case.

all round and top, carved pedestal with one full-sized plate-glass door and brackets. Splendid room.

B Quality, without pedestal, air-tight, ment or inside fittings.

£15 5 0	29 17 6
18 10 0	12 15 0
21 15 0	15 10 0
25 0 0	18 10 0

Above, 37/6, 57/6 & 72/6 extra.

made for all purposes—any estimates and drawings supplied on application.

BOTANICAL SPECIMENS

FOR MUSEUMS.

CONES OF RARE CONIFERS.
INFLORESCENCES OF CYCADS,
CYCAS, ZAMIA, MACROZAMIA,
CERATUZAMIA, STANGERIA, ENCEPHALARTOS, &c.,
MALE AND FEMALE.

SECTIONS OF BRITISH AND OTHER TIMBERS.
SPECIMENS FROM THE TROPICS.
SPECIMENS IN ALCOHOL and other media.

Models of British Fungi.

ECOLOGICAL SPECIMENS.

ANATOMICAL SPECIMENS.

HERBARIUM SPECIMENS.

Insectivorous and Parasitic Plants.
SETS ILLUSTRATING ECONOMIC PRODUCTS.
PATHOLOGICAL SPECIMENS.
FOR PARTICULARS SEND FOR SPECIAL PRICE LIST.

J. BACKHOUSE & SON, LIMITED,
THE NURSERIES (Scientific Department,)

Telegrams: "BACKHOUSE, YORK
'Scientific.'"

YORK.

W. D. WEBSTER,

Home Court, 24, Palace Road, Streatham Hill,
. . LONDON. . .

**COLLECTOR OF ETHNOGRAPHICAL SPECIMENS,
EUROPEAN AND EASTERN ARMS AND ARMOUR,
PREHISTORIC AND OTHER ANTIQUITIES.**

Telegraphic Address : " ETHNICALLY, LONDON."

ILLUSTRATED CATALOGUE published every three months. Each copy contains 20 plates reproduced from photographs, and is subscribed to by all the principal Museums in the world. Subscription 10/- per year, post free, payable in advance.

A few bound Catalogues can still be obtained at the following prices :—

Vol. 1 contains Catalogues	Nos. 1 to 10	- - -	30/-
Vol. 2	ditto	Nos. 11 to 17	- - - 20/-
Vol. 3	ditto	Nos. 18 to 23	- - - 25/-
Vol. 4	ditto	Nos. 24 to 27	- - - 25/-

The Collection consists of over 10,000 specimens from all parts of the world, any of which will be sent on approval on carriage being paid.

SPECIMENS BOUGHT OR EXCHANGED.

A. S. HUTCHINSON,

Naturalist, Furrier and Taxidermist to . . .

Manchester, Sheffield, Derby and Oldham Museums.

Undertakes all kinds of plain and artistic taxidermy. British Birds and Animals supplied at the usual prices. Private and public Museum Collections attended to and kept in good condition at a reasonable cost per annum. Work executed in any part of the kingdom.

A. S. HUTCHINSON, 85, London Road, DERBY.

W. F. H. ROSENBERG, F.Z.S.,

57, HAVERSTOCK HILL, LONDON, N.W.

Naturalist and Importer of Exotic Zoological Collections

Fresh Consignments in all branches of Zoology are constantly arriving. Mammal and Bird Skins and Skeletons; Birds' Eggs; Reptiles; Batrachians; Fishes; Lepidoptera, Coleoptera and all other Orders of Insects; Arachnida; Scolopendre; Shells, etc., etc, from all parts of the Globe.

PRICE LIST FREE. SPECIMENS SENT ON APPROVAL

All kinds of Museum Requisites and Collecting Apparatus kept in Stock.

SPIRIT SPECIMENS FOR DISSECTION

Type Collections, representing Orders, Families, or Genera, made up at moderate rates.

Photographs of
Familiar Trees
Plants & Flowers

in their SUMMER and WINTER appearance, with enlarged views of their bark, leaves, flowers and fruit, showing details of structure and growth.

MAY BE SEEN at the British Museum; Royal Art Library, South Kensington; University College, London; University College, Liverpool; Museum of Science and Art, Edinburgh; &c., &c. Lists on application.

HENRY IRVING, The Rowans, BROMLEY, KENT.

MUSEUMS ASSOCIATION.

President :

Sir WILLIAM TURNER, K.C.B., B.SC., F.R.S., D.C.L., L.L.D.

Treasurer :

Alderman W. H. BRITTAIN, J.P., F.R.G.S. (Sheffield).

Hon. General Secretary :

E. HOWARTH, Museum, Sheffield.

The object of the Association shall be the promotion of better and more systematic working of Museums throughout the Kingdom. In order to promote a better knowledge of Museums, the Association shall meet in a different town each succeeding year.

That each Museum contributing not less than one guinea a year be a Member of the Association, and that individuals interested in scientific work be admitted as Associates on payment of 10s. 6d. annually.

That each Museum be represented by three delegates, each having one vote. Each Associate to have one vote.

That each Museum belonging to the Association and each Associate receive one copy of the publications of the Association.

That a General Meeting of the Association be held annually, for the transaction of business, the reading of papers, and the discussion of matters relating to Museums.

MUSEUMS ASSOCIATION.

Some of the earlier volumes of the Report are nearly out of print, and Museums requiring complete sets should order them at once. Particulars can be obtained from the Secretary, Museum, Sheffield.

Henry Woodward, LL.D., F.R.S.

THE retirement of Dr. Henry Woodward from the keepership of the department of geology in the British Museum, a post that he has so efficiently filled for over twenty-one years, is an event of considerable importance in our museum world, and indeed in the scientific life of this country. Dr. Woodward, who was born on November 24, 1832, entered the service of the trustees in January, 1858, receiving the appointment of second-class assistant in the following year. He has therefore seen nearly 44 years of public service, and in that time what wonderful changes! In those early days, when Owen was superintendent of the natural history departments, G. R. Waterhouse keeper of the geological department, and S. P. Woodward, an elder brother of Henry, the senior assistant, the collections were still confined at Bloomsbury, where their decent arrangement and even their proper study was rendered impossible by the want of space. Under these unfavourable conditions Henry Woodward worked for some twenty-two years, giving abundant satisfaction to those above him, as may be inferred from the fact that in 1865 he was promoted to an assistantship of the first class, and placed two years later in the upper section of that class. It was during this period that he made himself the British authority on fossil crustacea, preparing for the trustees a catalogue of those remains in the national collection (1877) writing for the Palaeontographical Society, the monograph of British fossil Merostomata, and contributing to the Quarterly Journal of the Geological Society and other publications a long series of valuable papers chiefly dealing with extinct arthropoda, though by no means limited to that group. Nowadays many workers in the larger museums of the world are specialists almost of necessity, but forty years ago, with a small staff, an assistant in the British museum had to determine and arrange all kinds of palaeonto-

logical material. Another piece of work that prevented Mr. Woodward from sinking into a narrow specialism, was the editorship of the geological magazine, begun in 1864 in conjunction with Prof. T. Rupert Jones, but conducted by him since 1865 as editor in chief, often at considerable personal sacrifice.

This wide experience, when joined to the diligent performance of his official duties, pointed to Dr. Woodward as the fitting person to succeed to the keepership of the department, when that important post fell vacant in June, 1880. The decision was one of considerable moment, for the time had then at last been reached when, thanks to the perseverance of Owen, the great museum in the Cromwell Road was ready for the reception of the natural history collections. Into the exceedingly onerous work of packing and unpacking, of fitting up cases, of planning the re-arrangement and display of the vast collections in their new home, the keeper threw himself with energy, with tact, and with artistic feeling. He was aided in those early days by the late William Davies, by Mr. Robert Etheridge, jun., to whom were soon added Mr. Etheridge, F.R.S., Mr. R. Bullen Newton, Mr. A. Smith Woodward, while gaps in the ranks have subsequently been filled up by Messrs. G. C. Crick, F. A. Bather, J. W. Gregory, and C. W. Andrews. To co-ordinate the work of this staff, guiding all sections harmoniously towards the splendid result that has been achieved, must have been no ordinary task. Two features have distinguished Dr. Woodward's work as keeper; the one is the artistic skill manifested in the grouping of the larger specimens and the show cases so as to produce in each gallery an effective *coup d'oeil*, which must of itself impress the most uneducated spectator; the other is the constant attention to the needs of the outer public, as shown in the admirable guides, the descriptive labels, and the introduction of diagrams and illustrative recent specimens, in all which points Dr. Woodward's Department has led the way.

This is not the place in which to estimate the value of Dr. Woodward's scientific work, but it may be recalled that his labours as head of a rapidly expanding and most active department have not prevented him from devoting much time to the

service of the scientific public in other ways. We need only allude to his presidency of the Geologists' Association, the Geological Society, the Geological Section of the British Association, the Palaeontographical Society, the Malacological Society and the Museums Association. But it is, above all, as editor of the Geological Magazine that he is known to the geologists of the world. In this capacity he has befriended many a budding author, and has won the esteem of all his more mature colleagues. To a circle that is smaller, but is still a large one, his geniality and thorough good-nature are well known. The affection that so many feel for him has been intensified by their sympathy with him in the sad blow that has recently fallen on his family. The heartiest good wishes of "troops of friends" will go with him into his retirement, and if any class should give lively expression to their good will it should be the museum workers, not of his native country alone.

The statutory age for retirement in the civil service is 65, and the fact that the trustees of the British Museum induced the Treasury to prolong Dr. Woodward's tenure of his office shows that his services have been justly appreciated. We are glad to learn that his skill and experience will not be altogether lost to the Museum, but that he is to be employed on some pieces of work that have long needed doing. We hope it may be many years ere visitors to the Natural History Museum will cease to find their old friend, Dr. Henry Woodward.

Astronomical Models in Museums.

By J. G. GOODCHILD, of the Geological Survey, Edinburgh Museum.

[Paper read at the Edinburgh Conference, 1901.]

TEACHERS often experience great difficulty in conveying to their students even an approximately correct idea regarding the relative sizes and distances of the members of the solar system viewed in relation to the earth. Diagrams of the ordinary kind are of very little use, and the numerical statements given in books also often fail in this respect. The ordinary forms of orrery are merely toys, of no use whatever in helping a student to understand either the relative magnitude of the sun and its planets, or of the distance by which they are separated.

Many years ago Sir John Herschel suggested that a fair-sized field might be used to represent the space occupied by the solar system, and that the sun and the various planets might then be represented by balls of the relative size proper to this scale, and each one placed at its mean distance from the largest orb taken to represent the sun. It does not appear to be recorded whether this suggestion was carried into effect, or, if it was, whether it answered the purpose intended. Probably the scale prescribed would have proved as much too large as that adopted in the ordinary orrery was too small.

A successful attempt to deal with the same problem was carried out at the Museum of Practical Geology, where for half a century visitors to that admirably arranged museum have had excellent opportunities of learning one of the most important rudiments of astronomy.

But the plan adopted there still left room for improvement. On commencing the arrangement of the exhibits in the gallery devoted to Scottish geology and mineralogy in the Edinburgh Museum of Science and Art, I at once took advantage of what has proved to be an excellent opportunity for setting out models of the sun and the minor members of the solar system

in that section of the museum. As similar opportunities are presented in connection with many other museums, a short description of the plan adopted may serve a useful purpose on the present occasion. Accordingly I give it here.

The leading idea in the arrangement is that of presenting all the facts in as tangible or concrete a form as possible, modelling all the details to the same scale, and dealing with distances which extend beyond the limits of the museum by reference to some well-known public buildings or conspicuous natural objects in the city.

The gallery referred to consists of a rectangular hall at the north end, which is devoted chiefly to the minerals of Scotland, and of corridors next the walls at the remaining part, and separated by a railing from an open space in the middle. The gallery lies about magnetic north and south.

From the southern corridor to the railing bounding the north hall where the Scottish mineral collection is kept is a distance of 115 feet. If we take that space to represent the mean distance of the earth from the sun (assuming that to be 92,897,000 miles), we obtain a scale of 67,316 miles to an inch. [It may be remarked here that, for the general purpose in view, absolute accuracy is not required; all that one can hope to do by the means employed is to convey a good general idea regarding the subject specially under consideration.] On the scale chosen the diameter of the sun works out at about thirteen inches. A gilt ball of this size has therefore been made in the museum and fixed at the south end, where it forms an object just conspicuous enough to catch the eye without being unduly obtrusive. On the railing north of it (at a distance of 115 feet, as before mentioned) a steel pin with a globular head about a tenth of an inch in diameter representing the earth is firmly driven into the top of the oaken hand rail. It can thus be fingered, or even somewhat roughly used, without risk of displacement or damage. Along the railing, right and left of the pin, is a broad band of bright red, varnished, so as to bear frequent washing, and of such a length along the railing as to represent the mean distance traversed by the earth in 24 hours—the direction of the earth's movement being, of course, from left to right as we look

towards the gilt sphere representing the sun. On the scale adopted, this distance traversed by the earth in twenty-four hours is nearly twenty-four inches—half an inch more in the winter and half an inch less at the opposite season. The distance from the sun, represented by the position of the earth on the railing, represents its mean distance. In the winter time, at present, it is the length of one's arm (about two feet nine inches) nearer the model representing the sun, and the same distance further from it in the summer. This is useful as shewing how little the earth's orbit differs from a true circle. The earth's track is shown on the railing by a narrow line of white paint, about the width of the edge of a new penny ($\frac{1}{16}$ of an inch). This width represents the absolute amount that the earth's course deviates from a straight line in its movement through space in one second of time, which, in the case of Edinburgh, is about equal to the distance between North Berwick Law and the museum. The maximum orbital traverse is 99,204 feet per second, and the minimum 96,085. Taking the mean at 97,644, and the rotational velocity in the latitude of Edinburgh at nearly 853 feet per second, the ratio of the rotational velocity to the orbital velocity at Edinburgh is as 1 : 116 in January, and 1 : 112 in July, with a mean ratio of 1 : 114. The gravitational pull exercised upon the earth by the sun in causing the deflection just referred to is equivalent to 3,561,800,000,000,000,000 tons, or roughly, to 36 with 17 cyphers.

In connection with geological matters, it is of some importance to convey some idea regarding the precession of the equinoxes. Part of the white line just referred to as marking the earth's daily traverse has therefore been divided up into intervals corresponding to the relative distances for each year. Taking the distance along the orbit as 21,392 miles, each space on the scale adopted works out to $\frac{1}{318}$ of an inch, or about one-fortieth of the sun's diameter.

As regards the inner planets, it suffices to put in a small brass pin on one of the rails of the corridor at a distance of 48 feet from the sun to represent Mercury, and another, somewhat larger, at 90 feet for Venus: all that is required in each case is to convey a general idea of the relative sizes and distances of

these bodies on the scale adopted. In like manner Mars is represented by another small pin's head placed on the sill of the window due north of the model of the sun. The correct relative distance is really a few feet greater, being 193 feet.

At the scale adopted the minor planets would be situated over the Heriot Watt college, opposite the museum; Jupiter would be represented by a ball the size of a four-shilling piece at the south face of the Signet library; Neptune by a ball of the diameter of a threepenny piece placed on the Free Church college; and the outer limit of the solar system, so far as known at present, would be represented by a circle passing through Musselburgh, Dalkeith, Rosslyn, Glencorse reservoir, Curriehill, Ratho house, Dalmeny park, between the Oxcar and Inchcolm, to Inchkeith. If it were desired to shew the nearest fixed star (α Centauri) on the same scale, a space would be required in each direction around Edinburgh equivalent to between four and five thousand miles.

In the museum these facts are stated on a printed label in a glass-covered frame which is hung close to the model of the earth.

The relative size of the moon, and its varied and complicated movements in space, are matters of considerable importance in connection with physiography. Special attention has therefore been devoted to this part of the subject. To indicate the relation of the moon to the earth, a small brass pin, about half the diameter of that representing the earth, has been driven into the railing, with its head flush with the surface. The distance represented is taken as the mean (238,830 miles), and is set out at a trifle over three and a half inches (3.525) from the earth, on the line marking the earth's track (and therefore at the position of its third quarter). This distance is a trifle over sixty and a quarter times the earth's equatorial radius, and is proportional to $\frac{3}{8} \frac{1}{2} \frac{1}{2}$ of the earth's mean distance from the sun. The moon's distance from the earth varies from a maximum of 252,972 miles to a minimum of 221,614, which distances would be represented respectively by 3.758 and 3.292 inches; but for the general purpose in view it is, on the whole, better to disregard the quarter of an

BOTANICAL SPECIMENS

FOR MUSEUMS.

CONES OF RARE CONIFERS.
INFLORESCENCES OF CYCADS,
CYCAS, ZAMIA, MACROZAMIA,
CERATUZAMIA, STANGERIA, ENCEPHALARTOS, &c.,
MALE AND FEMALE.

SECTIONS OF BRITISH AND OTHER TIMBERS.
SPECIMENS FROM THE TROPICS.
SPECIMENS IN ALCOHOL and other media.

Models of British Fungi.

ECOLOGICAL SPECIMENS.

ANATOMICAL SPECIMENS.

HERBARIUM SPECIMENS.

Insectivorous and Parasitic Plants.
SETS ILLUSTRATING ECONOMIC PRODUCTS.
PATHOLOGICAL SPECIMENS.
FOR PARTICULARS SEND FOR SPECIAL PRICE LIST.

J. BACKHOUSE & SON, LIMITED,

THE NURSERIES (Scientific Department,)

Telegrams: "BACKHOUSE, YORK
'Scientific.'"

YORK.

W. D. WEBSTER,

Home Court, 24, Palace Road, Streatham Hill,
. . LONDON. . .

**COLLECTOR OF ETHNOGRAPHICAL SPECIMENS,
EUROPEAN AND EASTERN ARMS AND ARMOUR,
PREHISTORIC AND OTHER ANTIQUITIES.**

Telegraphic Address: "ETHNICALLY, LONDON."

ILLUSTRATED CATALOGUE published every three months. Each copy contains 20 plates reproduced from photographs, and is subscribed to by all the principal Museums in the world. Subscription 10/- per year, post free, payable in advance.

A few bound Catalogues can still be obtained at the following prices:—

Vol. 1 contains Catalogues	Nos. 1 to 10	- -	30/-
Vol. 2 ditto	Nos. 11 to 17	- -	20/-
Vol. 3 ditto	Nos. 18 to 23	- -	25/-
Vol. 4 ditto	Nos. 24 to 27	- -	25/-

The Collection consists of over 10,000 specimens from all parts of the world, any of which will be sent on approval on carriage being paid.

SPECIMENS BOUGHT OR EXCHANGED.

A. S. HUTCHINSON,

Naturalist, Furrier and Taxidermist to . . .

Manchester, Sheffield, Derby and Oldham Museums.

Undertakes all kinds of plain and artistic taxidermy. British Birds and Animals supplied at the usual prices. Private and public Museum Collections attended to and kept in good condition at a reasonable cost per annum. Work executed in any part of the kingdom.

A. S. HUTCHINSON, 85, London Road, DERBY.

W. F. H. ROSENBERG, F.Z.S.,
57, HAVERSTOCK HILL, LONDON, N.W.

Naturalist and Importer of Exotic Zoological Collections

Fresh Consignments in all branches of Zoology are constantly arriving. Mammal and Bird Skins and Skeletons; Birds' Eggs; Reptiles; Batrachians; Fishes; Lepidoptera, Coleoptera and all other Orders of Insects; Arachnida; Scolobendræ; Shells, etc., etc, from all parts of the Globe.

PRICE LIST FREE. SPECIMENS SENT ON APPROVAL

All kinds of Museum Requisites and Collecting Apparatus kept in Stock.

SPIRIT SPECIMENS FOR DISSECTION

Type Collections, representing Orders, Families, or Genera, made up at moderate rates.

of the kind. Moreover, the parts likely to suffer any damage are so arranged as to be easily replaced by duplicate parts kept in stock. The lunarium consists of a light gun-metal cycloidal arch, firmly screwed on to the railing. Its span is 26 inches, just wide enough to clear the space representing the mean daily traverse of the earth (25'08376 inches), shewn by the red line on the railing, and its rise about one foot six. At the crown of the arch are short cylindrical expansions, $\frac{3}{4}$ in. in diameter on the inside of the arch, and $1\frac{1}{4}$ in. in diameter on its upper surface. Both are dressed to a horizontal surface above and below. A hole is bored right through them $\frac{1}{4}$ in. in diameter, for the passage of a milled-headed pin, to be presently described. Above is placed a separate gun-metal cylinder, also $1\frac{1}{2}$ in. in diameter, dressed at right angles to the vertical axis on its lower surface, but with its upper surface inclined $5^{\circ} 8'$. This inclination is intended to represent the mean inclination of the moon's orbit to the plane of the ecliptic. The thinnest part of this "wedge" is $\frac{1}{4}$ in. Firmly screwed into its under side is a steel pin, accurately fitting the hole in the cylindrical head of the arch, and provided with a milled head, 1 in. in diameter. The object in view is to enable one to make the cylinder with the inclined surface revolve in a horizontal plane, and thereby incline the plane representing the moon's orbit in any required direction in relation to that of the sun. Perpendicular to the inclined surface is firmly screwed in another cylindrical pin of steel, which projects an inch above. The upper part has a screw cut upon it, which bears a hemispherical head, $1\frac{1}{2}$ in. in diameter, and of gun-metal like the other parts. This is so arranged that it can be fastened into position upon the inclined pin in such a manner as to leave a space of $\frac{3}{8}$ of an inch between its lower surface and the inclined plane beneath. Central to the dome is drilled a hole $\frac{1}{4}$ in. in depth, cut to a female screw of $\frac{1}{4}$ in. in diameter. This is intended to receive a pin bearing a small model of the earth, which can be exchanged when desired for a small plate with a central pinhole for sighting the moon and sun. Both of these have an adjustment to enable one to bring their centres accurately into line with those of the sun and moon.

The steel pin between the two inclined planes is intended to form the axis of motion of an arm consisting of a strip of steel $\frac{3}{16}$ of an inch in thickness, shaped like a battledore, of which the extremity of the handle is $3\frac{1}{4}$ inches from the centre of the "bat," which is slotted to half an inch in the direction of the length of the bar, the slot being $\frac{1}{4}$ in. in width. The object of having this slotted instead of a circular hole is to permit of the end bearing the model of the moon being moved $\frac{1}{4}$ in. nearer or farther, as required, so as to represent the varying distances of the moon from the earth in connection with annular or total eclipses. The "bat" is prolonged so as to afford attachment for a button, by which the steel bar may be rotated in the inclined plane, and by which also the maximum, minimum, or mean distance of the lunar model from that of the earth may be adjusted at will.*

To use the lunarium, rotate the inclined plane by means of the milled-headed pin beneath the arch until the plane is inclined at right angles to the line joining the models of the sun and the earth. In this position, when the adjustment is correct, the model of the moon is exactly in line with both the other celestial bodies, and the sun is wholly eclipsed by the moon, when viewed through the pin hole representing the position of the earth, which is the case when the steel bar is withdrawn to the end of the slot nearest the model of the moon, or else appears to be annularly eclipsed, which is the case when the steel bar is pushed in to the end of the slot farthest from the moon. The daily positions of the moon are, of course, represented by merely rotating the steel bar in the inclined plane, while the successive monthly positions assumed in the joint traverse of the moon and the earth around the sun are got by turning the inclined plane by means of the milled head. The hours are engraved on the lower edge of the domed head above the steel bar, and the signs of the zodiac on the lower edge of the cylinder with the inclined plane.

With this simplest possible form of lunarium all phenomena connected with eclipses which it is possible to shew under

* Note added December 9, 1901—Some modifications of this plan have lately been introduced in the museum.—J. G. G.

circumstances such as this can be readily comprehended by anyone who will take a little trouble. What has been done at the Edinburgh museum can, of course, be done equally well at other public institutions, and I have given the dimensions most suitable for the space available in Edinburgh, which can easily be adapted to other dimensions, large or small, as the case may be, in museums elsewhere.

NATURE STUDIES IN MUSEUMS.—An interesting article by Miss Ethel A. M. Webb, entitled "The Utilisation of Museums: a Successful Experiment at Warrington," has been reprinted from the October "Record of Technical and Secondary Education." The scheme originated in "a children's botanical competition, in connection with a series of object lessons in plant natural history, exhibited in the museum wall-cases." The specimens and drawings are set out on small, sloping boards, which can be readily moved about, and are thus eminently suited for class demonstrations in schools. The specimens can also be detached and handed round. A further attempt to promote the study of nature by children consisted of a course of botanical lectures, given at the museum, and amply illustrated by means of the actual objects described. Miss Webb reproduces two of these object lessons for the benefit of her readers, and gives at the end of each a set of questions. The children were required to write out the substance of the lectures at school, and it is stated that more than 50 per cent. set down correctly and completely what they had learned. The scheme appears an excellent one, and the realistic story method adopted in "The History of an Apple" is singularly interesting and effective.

Hygiene as a Subject for Museum Illustration.

II.

THE definition of the word hygiene as given by Dr. Parkes (the founder of Sanitary Science), is somewhat long but has not been improved upon ; it is as follows :—

“Hygiene is the art of preserving health, and aims at rendering growth more perfect, decay less rapid, life more vigorous, death more remote.”

The same authority subsequently abbreviated the definition thus, “Taking the word hygiene in its largest sense it signifies *rules for perfect culture of mind and body.*”

This is now generally accepted as the classic definition.

The rules laid down by Parkes are grouped into three divisions, and are given as follows :—

1. Man in relation to the natural conditions essential to life. The air, water, food, soil, and nature.
2. Man in his social and corporate relations as a member of a community with certain customs, trades, conditions of dwellings, clothing, &c. ; subjected to social and political influences, sexual relations, &c.
3. Man in his capacity as an independent being, having within himself sources of action, in thoughts, feelings, desires, personal habits, all of which affect health and require self-regulation and control.

Here then in embryo is the task of a curator who may be entrusted to illustrate the subject of hygiene on any scale determined upon by his authorities. Of course, the most important question is upon what scale should the illustration be made, or in other words what is the accommodation and what are the funds at his command ?

If an unlimited scope presented itself the ideal illustration would consist of a building of good size, constructed preferably in more than one style and with a variety of materials, well designed as regards aspect and plan, to take advantage of

natural conditions of light and air, with plenty of space around the building for the development of various branches of sanitary science which cannot be properly treated indoors, such as meteorology, sewerage, sewage disposal, surveying, botany, and many forms of healthy out-door exercises. There should also be erected in the grounds two or three typical dwellings which might be utilised by the curator and attendants as dwelling houses, and these might be open to the public for inspection at stated times.

The building proper should contain at least seven distinct sections to house properly the different and natural branches of the subject, including, air, water, personal hygiene, dwelling houses, state medicine, science, literature.

In addition there should be commodious laboratories for chemical and bacteriological research, workshops for engineering, plumbing, carpentry, masonry, and class rooms for physics, physiology, and drawing, and there should be a good lecture room for large and popular audiences. The various rooms, offices, cloak rooms, and lavatories should be arranged to be typical and perfect illustrations in general and in detail *i e*, the walls, floors, furniture, and decoration. Every window, door, and fireplace should be a speciality, and the lighting, heating, and ventilation must be as perfect and as varied as possible.

It would, I think, be waste of time to elaborate details of a scheme such as outlined above, simply on account of its too comprehensive character. It is obvious that only a national scheme would be likely to take advantage of such suggestions or entertain such proposals. To make these remarks then more useful and practical I will assume a limit to the space and funds, and that limit which I consider within the bounds of any town in England, and not beyond the scope of existing museums.

I will proceed to discuss the arrangement and fittings of a space 100 feet by 50 feet, and make suggestions for the utilisation of such space to the best advantage, and at the same time cover the whole subject in as complete and thorough a manner as could be done in the space mentioned.

Leaving out the auxiliaries of out-door sections, offices, class rooms, library, laboratories, and lavatories, several or all of which would already exist in a good museum, and devoting my attention entirely to the exhibits, or, as my title suggests, the illustration of hygiene. This space we will designate

"THE HYGIENIC SECTION."

It may consist of a new wing to some old building or a section of an existing building may be devoted to the subject. If the latter it will be useless to lay down rules as to design, aspect plan, or construction, as all these will have been determined. If the former, let it be built of the best local materials above ground level, with proper damp-proof course, and concrete to prevent dampness and ground air. The floor, for convenience, should be laid on concrete, and include illustrations of wood blocks, tiles, parquetry, mosaic, concrete and asphalt. This space would be best arranged with a gallery (and in fact would be inadequate without one), at least 12 feet wide all round the building, and this alone will determine, to a certain extent, the methods of lighting and ventilating, which should be ample and complete, comprising side windows, top-light and fresh air inlets on all sides; the most efficient arrangement being a lantern, as it is termed, in the centre of the roof, both for top-light and cross-ventilation. The windows may each, without difficulty, be made to illustrate some method of opening, some kind of glass, or some practical means of access for cleaning, &c., or some treatment of blinds and curtains, or conveniences for privacy and light. The walls in the same way may be made to illustrate styles of wall coverings and treatment suited to the particular sections, and of these styles reference will be made when dealing with the separate sections.

The roof would be more conveniently made flat, with the exception of the central lantern already referred to. The gallery floor would equally serve to illustrate floor construction, other than the solid floors suggested for the ground floor, and may comprise fire-proof construction, lighter concretes, and ordinary living and bedroom floor construction.

The corners of the room skirting board, cornice, and fittings must be so arranged as to allow of easy access for cleaning, and to prevent as far as possible lodgments for dust.

The warming of this room should comprise a ventilating coal stove, and if possible a hot water system with radiators.

The ventilation would have to be carefully considered in regard to the summer and winter seasons ; for the summer the cross ventilation in the roof, the windows, and some additional inlets would suffice, and in the winter the ventilating stove and heating apparatus would supply the need of fresh warm air. For exhausts of bad air an outlet valve should be provided into a flue placed side by side with the smoke flues. An electric fan should be provided which could be under control to act as required, and would complete the system of ventilation.

The value of strict attention to these details of construction in regard to the building itself cannot be over-estimated, and the lighter, dryer, cleaner, fresher, and more comfortable the section the more powerful agent will it be in disseminating sanitary knowledge. As a rule the hygienic features of public buildings serve only as illustrations of defects, but the hygiene museum should demonstrate the highest possibility.

But enough for the building, which is more a matter for the committee than the curator, and to proceed with the main intention of this paper, viz., a scientific and complete illustration of the subject of hygiene so far as the exhibits are concerned.

The first thing to decide upon is a working classification, and by working I mean a classification which will allow of convenient grouping and at the same time will differentiate the subjects that are incongruous.

The classification I prefer is as follows, but it must be understood that there is nothing binding in this arrangement and that modifications can be made to suit particular cases.

CLASSIFICATION.

Div. A.—AIR	Div. B.—WATER.	Div. C.—SOILS.
Sec. 1 Analytical.	Sec. 1 Composition.	Sec. 1 Varieties.
,, 2 Physical.	,, 2 Source.	,, 2 Sites.
,, 3 Ventilation.	,, 3 Pollution.	,, 3 Water-bearing
,, 4 Warming.	,, 4 Purification.	,, 4 Permeability.
,, 5 Lighting.	,, 5 Supply.	

DIV. D.—PERSONAL.	DIV. E.—DOMESTIC.	DIV. F.—COMMUNAL.
Sec. 1 Physiology.	Sec. 1 Family.	Sec. 1 Nationality.
.. 2 Food.	.. 2 Home.	.. 2 Urban.
.. 3 Clothing.	.. 3 Furniture.	.. 3 Rural.
.. 4 Habits.		
DIV. G.—DWELLING.	DIV. H.—PREVENTION.	DIV. I.—PROTECTION.
Sec. 1 Design.	Sec. 1 Accident.	Sec. 1 First Aid.
.. 2 Materials.	.. 2 Fire.	.. 2 Hospitals.
.. 3 Construction.	.. 3 Disease.	.. 3 Sanatoria.
.. 4 Sanitation.	.. 4 Disinfection.	
.. 5 Refuse Disposal.		
DIV. K.—DEMOGRAPHY.	DIV. L.—METEOROLOGY	DIV. M.—LIBRARY.
	DIV. N.—SCIENCES.	
	Sec. 1 Chemistry.	
	.. 2 Bacteriology.	
	.. 3 Physics.	
	.. 4 Geology.	
	.. 5 Microscopy.	
	.. 6 Anthropology.	

The following divisions may be conveniently grouped :—

A—BC—DEF—G—HI—K—L—M—N.

LIST OF ILLUSTRATIONS.

Div. A.—Air.	METHOD OF ILLUSTRATION.
Sec. 1 Analytical ..	Apparatus for analyses. Diagrams of composition. Air-testing apparatus. Diagram of foreign elements found in air. Diagram of diseases carried by air. Model to demonstrate CO ₂ in air and ventilation.
Sec. 2 Physical ..	Diagrams of air movements—pressure—expansion. Diagrams—physiological—shewing breathing. Barometer Fortins, aneroid and self-recording. Hygrometer—Wet and dry bulb, Daniels'. Anemometers for air currents and wind. NOTE.—Models and apparatus to illustrate various physical laws of air will be found in the section devoted to physics.
Sec. 3 Ventilation ..	Rules, tapes, chains, metre for measuring space. Diagram of principles of measurements of circles, angles, rectangle, &c. Diagram shewing vitiation of air by individuals, coal, artificial lights, and animals.

Diagram shewing cubic space required and allowed by statutes and regulations.

Diagram shewing the standards of permissible impurity; also the air required to preserve healthy conditions.

Diagram of mortality in trades where air is concerned.

Diagram shewing healthy conditions as regards temperature, CO₂ dryness, &c.

Inlet ventilators, including ordinary gratings, louvres, Sherringham, hit and miss, conical air-bricks, Hinkes' Birds' windows, Tobin's tubes. These should be fixed in a wooden frame, with hollow space behind, communicating with the open air, to shew the appliances in action

Outlets—noiseless and mica flaps for fixing into flues.

Diagram shewing room under good and bad conditions of ventilation.

Fans for propulsion or extraction of air in action. (Electricity is the most convenient power for driving these fans.)

Cowls for preventing down draught both for ventilation and chimney-top, including McKinnell's.

Cowl with bird's nest, shewing what shapes to avoid.

Screens for cleaning air, cotton wool, coke, &c.

Diagrams of methods of extraction by water and gas.

Diagrams shewing air vitiation and methods of purification in schools.

Diagram shewing advantages and disadvantages of detached, semi-detached, terrace, and back-to-back houses.

Diagram of systems in H.M. prisons, House of Commons, &c.

Flues. Special linings for air flues.

Diagram shewing building angle for regulation of air space in streets and at back of buildings.

Sec. 4 Warming .. Ordinary grate. Slow combustion grates and stoves. (One or more to be fixed.)

Ventilating grates—gas and coal (unfixed).

Hot-water system, with radiator, low pressure. (Fixed and in use.)

Galton grate, or one on same principles. (Fixed and in use.)

Diagram shewing the principle of Galton grate.

Diagrams of hot-water systems, high pressure, cylinder, and tank.

Electric radiator.

Gas stoves (incandescent).

Hot-air stoves.

Diagrams of hot-air systems of warming.

Refrigeration. Freezing and sterilizing apparatus and diagrams.

- Sec. 5 Lighting .. Gas burners—ordinary, regenerative, incandescent, and Bunsen.
 Oil burners—dangerous, safe, economic.
 Electric light.
 Ventilating gas burners, sunburners, &c.
 Specimens of glass prisms for reflecting daylight.
 Diagrams showing the extreme value of sunlight.
 Sunshine recorder (see meteorology).

NOTE.—This section may be illustrated largely by specimens in use in various parts of the building.

D. P. H.

CHILDREN AND MUSEUMS.—The committee of the Manchester Art Museum at Ancoats have for some years past taken advantage of the clause in the education code which permits the visits of school children to museums for lessons during school hours. Many of the elementary schools in Ancoats send classes of boys and girls, ranging in age from ten to fourteen, to receive courses of lessons in the museum, where a special teacher is provided for the work. Visits are paid weekly, and the lessons are fully illustrated by pictures. Natural history, botany (supplemented by visits on Saturdays to the Zoological Gardens at Belle Vue, and by summer excursions into the country), English history, and physical geography are among the chief subjects taught. The method of teaching is such as will stimulate the observation and the reasoning powers, every detail in the picture being observed, and, as far as possible, accounted for by the children, who are helped by leading questions. The genuineness of their interest is proved by the fact that they are frequently able to remember and explain every detail of a picture after more than a year has elapsed. The school teachers who have had experience of the museum work are in full sympathy with it, and say that the school work is often visibly improved in consequence. The governing body of the Manchester Art Museum has just been amalgamated with that of the university settlement, which has its head-quarters in the same building.

The Board of Education and Aid to Museums.

MOST of the provincial museums of the United Kingdom have at one time or another benefited by the aid granted by the Science and Art department towards the purchase of specimens, and though there may have been room for some criticism as to the method adopted in allocating the grant, yet it has generally proved so useful that criticism has to a great extent been disarmed, especially as the authorities at South Kensington always received with courteous consideration all representations made to them. Under the newly organised Board of Education this grant is fortunately being continued, the sum set apart for the purpose this year amounting to £1,500. Not unnaturally, the board is making certain enquires with respect to the observance of the rules laid down in making the grant; and probably the officials of provincial museums have received recently a circular letter relating to some of these rules. It may be useful here to make some comment on these, and all readers of this journal who are interested in the matter are strongly invited to give their opinions in these pages. The first rule says that primarily the grant will be given towards the purchase of reproductions for museums, but may also be made for the purchase of original objects of decorative art or of science. In considering the applications preference will always be given to those for reproductions. That a rigid adherence to this rule may work very unfairly, and even unwisely, has frequently been pointed out. Hitherto if the applications received for grants for the purchase of reproductions have been sufficient to absorb the whole sum available, no aid has been given to museums for the purchase of original objects. There are certain objects that can be reproduced effectively, and to certain students are useful in all museums; but there are obviously other objects, that would be much more serviceable in many museums, that are absolutely incapable of reproduction. Pottery, for instance, which perhaps more than any other substance lends itself to artistic design and decoration can scarcely be reproduced except at the

original cost. Lace and textile fabrics are again substances that give great facilities for originality of design in ornament, that would be lost by any mechanical reproduction. Iron-work, cutlery, glass, wood-carving have all important relations to decorative art, and in some museums are absolutely essential to local requirements, yet they cannot be reproduced in a manner to be of service. Even in the case of silver, the cost of electro-types is often very high and might with more advantage be expended in simpler original objects, for after all the evidences of the individual handicraftsman's work are of as much importance to the art-worker as is the design or form of the object. Plaster casts have their uses, but they often show everything except the soul and vigour of the producer of the original, and their repetition in all museums becomes somewhat wearisome and depressing, whereas the effect of art objects ought to be stimulating. These points are merely mentioned to show that a rigid adherence to this rule may exclude some museums almost entirely from the benefits of the grant in aid, although they are as much entitled to them as other museums whose special local industries or art-craftsmen's work can be met by reproductions.

Coming to the second rule, about which a circular has just been issued, it states that "Applications for a grant must be accompanied by a list of the objects which it is desired to purchase." This appears to be really impracticable. It is, of course, quite reasonable that if the Board of Education make a grant towards the purchase of objects for a provincial museum the Board should be offered every facility of judging that the objects so purchased are in all respects suitable for the museum. But to submit a list of objects which it is desired to purchase for the Board's sanction before the purchase is made would result, in nearly every case, in the loss of the opportunity to purchase. Objects come to museums in various ways. Sometimes private owners offer them for sale, at other times the offer comes through a dealer, or again a sale by public auction affords the opportunity of securing desirable specimens. In nearly all these cases the purchase has to be made with scarcely any delay, or the chance is gone, even the interval between committee meetings to obtain the requisite official

authority being often too long for the seller to wait. If this rule is to be rigidly insisted upon perhaps the Board will appoint an inspector whose duty it shall be to inspect all objects offered to museums on which it is intended to ask for a grant in aid, and even then the rule could not always be adhered to. As for instance in the case of a provincial museum which recently purchased a collection of iron and silver work at the sale of the Chateau de Heeswijk collection in Holland. Unless the inspector had accompanied the curator to Holland he could hardly have judged the specimens, nor would it have been possible to give a list of the objects it was intended to purchase, as that depended greatly on the direction of prices in the sale. Such an inspector as has here been suggested might be of great service to provincial curators, though, now-a-days they are not quite so unacquainted with the true aims of their museums as may have been the case in days gone by; nor are they altogether lacking in the knowledge and culture necessary to qualify them as judges of the merits of the objects desirable for their museums.

The third rule says: "Before a grant can be sanctioned the objects must be approved by the board," and not only will the reasonableness of this rule be admitted, but it will be welcomed as giving a curator the opportunity of obtaining the best expert opinion on the value of the specimens he has selected.

The other rules only relate to questions of museum administration, are perfectly reasonable, and need not further be referred to.

These remarks have been made on the well-sustained supposition that the object of the Board of Education is to assist museums to obtain such objects as will best stimulate an active art feeling amongst the craftsmen of the country in whatsoever material their work may be manifested, and it is hoped that such interpretation will be put upon the rules as will avoid any retardation of museums upon the lines the Board endeavour to foster in such a valuable and useful manner.

The value of this aid in a local sense is greater than perhaps the Board of Education quite realises. To museums with restricted incomes a money grant gives welcome help, and what

is almost more valuable, the fact that if certain objects are purchased for a museum half the cost will be paid by the Board of Education, will often incline a museum committee to acquire specimens, which without this incentive they would not otherwise entertain.

IRISH GOLD ORNAMENTS.—The Society of Antiquaries have had under consideration the action it should take in regard to the legal proceedings instituted on behalf of the Treasury against the trustees of the British museum to obtain possession of the gold ornaments that were discovered in Ireland in 1896, exhibited in the society's rooms at Burlington House in the following year, purchased a few months later on behalf of the British museum, and in 1898 were claimed by the Irish members as objects which ought to be returned to their country and there retained for exhibition. The view taken by British archæologists generally was expressed by the Society of Antiquaries last year, when it declared that it viewed with marked dissatisfaction the proposal to remove these ornaments from their present custody, and expressed the opinion that "the cause of archæology would be best served by their retention in the central museum of the Empire, where they are accessible to a greater number of students than would be the case elsewhere; while, as remains of the era of the ancient Britons, and having only an accidental connection with Ireland, these relics could be placed nowhere more appropriately than in the British museum." The outcome of their further deliberations was a decision to lay before the King, who is patron of the society, the resolution just quoted, and to communicate it also to the Lords Commissioners of the Treasury.

Professor Ray Lankester on Museums.

A NEW wing of the Ipswich museum was opened on November 8, and an address was delivered by Professor E. Ray Lankester, who is president of the museum. The main point of the address, of which an abridgment appeared in *Nature* for November 28, is that a public museum should have two, and not three, main objects. The first is the conservation, for purposes of study, of the records of antiquity and natural history in the locality of which it is the centre. The second is to exhibit, in the most perfect and attractive way, to all who choose to come and see, the most interesting, beautiful, and instructive of the things in its possession, especially such as will excite an interest in the study of archæology and natural history amongst the neighbouring inhabitants. The third object, which in Professor Lankester's opinion should not be an object of the public museum, is that of education in the narrowest sense of the word. That is to say, the student of zoology, botany, or what not, should be catered for by his own board-school, college, university, or technical institute. The display of collections suited to his special needs obscures the attractions of a museum for the general public, and diverts the labours of the curator from their proper end, namely, the preservation and arrangement of the material for research. To put the matter bluntly: the museum is to be run for the original worker in science; but to do this it is necessary also "to excite in the ratepayers who pay for the whole affair a pleasurable and intelligent interest." There is so much truth and common sense in this rather cynical expression of opinion, that we hope someone will be found to take up the cudgels on behalf of the numerous students, past the stage of gaping admiration, but not yet qualified researchers, who have for many years past derived so much help and instruction from the great public museum of which Professor Ray Lankester is now the director.

General Notes.

AT HOME.

Mr. Rowley, of the Leicester museum, has been appointed curator of the Exeter museum.

BRITISH MUSEUM APPOINTMENT.—Mr. Charles Tate Regan, of Queen's College, Cambridge, first class in the National Science Tripos, has been appointed to a second class assistantship in the zoological department of the British Museum, in succession to Dr. J. W. Gregory, now professor of geology at Melbourne.

EDINBURGH MUSEUM APPOINTMENT.—One of the objects in view in the transference of the Edinburgh museum of science and art to the Scottish education department was its development according to the particular educational needs of Scotland, and the committee of council on education announced in their report this year that while maintaining the efficiency of the museum for its former purposes, they desired to use it, where possible, to reinforce other educational agencies, and particularly to turn it to account for the benefit of classes related to technical education. It is in pursuance of this policy that the museum staff is now being increased by the appointment of a keeper of the technological collections. Lord Balfour of Burleigh has selected for this office Dr. Alexander Galt, of Glasgow University. Dr. Galt was for eight years official assistant to Lord Kelvin, in whose laboratory he had considerable experience alike in scientific research and in the application of science in the arts. He has also had excellent opportunities of becoming acquainted with the teaching of science in elementary and secondary schools, and in training colleges. He is thus equally qualified to take part in the development of the technological collections in the museum, and to promote their use by students and teachers.

Mr. Arthur John Evans, keeper of the Ashmolean museum at Oxford, has been elected a corresponding member of the Munich Academy of Sciences.

NEW MUSEUM AT SHEFFIELD.—On December 7th the Lord Mayor of Sheffield opened a new museum at the East End of the city of Sheffield, which will be known as the High Hazels museum. It is situated in a house, which has been adapted to the purposes of a museum, in a pleasure park, and is intended to illustrate the history of Sheffield as well as the art productions connected with its industries. One room is

devoted entirely to plans, views, and other illustrations of the history and growth of the city, and there is also a fine collection of wrought iron-work and silver. Loans of pictures have been received, as well as a collection of Japanese objects, and the Board of Education has lent a very instructive collection of objects of industrial art, together with an attractive selection of pictures. It is proposed to arrange a natural history collection, specially adapted to elementary school requirements in one of the rooms.

MUSEUM AT LINCOLN.—The city council of Lincoln are proposing to establish a museum in the Grey Friary, and they are also acquiring an extensive piece of land adjoining it for further museum developments. It is rather singular that this ancient town has not up to the present possessed a museum, for the county of Lincoln is rich in antiquities, which, when found, have hitherto had no abiding place, and it is the obvious duty of the Lincoln council to provide a suitable habitation for them.

NEW MUSEUM FOR BOLTON.—The people of Bolton will shortly enjoy the possession of an interesting bit of property which was made over to the corporation some time ago by the generosity of a fellow-townsmen. The ancient house known as "The Hall-i'-th'-Wood," which had its origin in Tudor days and which more than a century ago was the home of the inventive Lancashire genius Samuel Crompton, was bought by Mr. W. H. Lever, and the decaying building has been judiciously restored, to remain henceforward a public museum. Whether or not the relics of Crompton, which are now lodged in the Chadwick museum in Bolton under Mr. W. Midgley's care, will be transferred has yet to appear. The gift of the Hall-i'-th'-Wood was actually made so long ago as December, 1899, when Mr. Lever, writing from Hillside, Bolton, told the borough council that he would be willing to give the property to the public, together with £1,200 in cash for repairs and road-making. This timely offer was, of course, accepted, and the work done has been at once thorough and scrupulously directed to preserving the character of the structure.

MUSEUM SUNDAY.—Mr. Mark H. Judge, honorary secretary of the Sunday society, wrote thus in the *Daily Chronicle* of Dec. 6:—"Last Sunday completed the first decade since the Sunday society commenced its record of the number attending the national and municipal collections of art and science on the anniversary of Museum Sunday. The success of Sunday opening has been so that already it is a matter of course, and the figures have long since lost the special interest

they once had. It may, however, be worth while to give in round numbers the figures for London, Dublin, and Edinburgh. They are as follows:—London, 8,500; Dublin, 5000; and Edinburgh, 2,100. It is to be regretted that with such figures to prove the success of Sunday opening at the museums, that the picture galleries in the metropolis should not be open during the winter months. Surely the trustees of the galleries will soon follow the example of the trustees of the museums, and admit the people on their leisure day at this season of the year, when the climate is not always such as to make the parks available to any but the most robust."

GEOLOGICAL SURVEY.—The "Summary of Progress of the Geological Survey of the United Kingdom for 1900," issued in November, 1901 (price one shilling), contains a "Catalogue of types and figured specimens from British Pliocene and Pleistocene strata preserved in the Museum of Practical Geology, London," also a similar catalogue for Devonian strata, both by Mr. H. A. Allen. "Each specimen is entered under the name given to it when first figured (or described)," but later names applied to the same specimens are quoted. The museum register-number, the locality, and the horizon are also given. This is undoubtedly the best plan for the compilation of such a list. The "Summary" for 1899 contained a catalogue of the eocene and oligocene types, by Mr. Allen, and subsequent years will, doubtless, see a continuation of this useful work.

ELECTRICAL MUSEUM.—The Institution of Electrical Engineers contemplate the formation of a museum of electrical inventions, so that the evolution of the practical application of this all-powerful agency shall have full illustration. In no science, probably, are quicker studies made in invention than is the case with electricity, and the institution, in thus arranging for the proper preservation of the history of these inventions, are showing commendable foresight. Until a separate building is erected it is intended to place the objects on loan in the Victoria and Albert Museum.

THE MUSEUM AS TEACHER.—An experiment in teaching that promises to produce good fruit has been started in Leeds under the auspices—or rather on the initiative—of the local branch of the National Teachers' Union. The idea is to make use of the well-equipped museum of the Leeds Philosophical and Literary society, in Park-row, for direct teaching purposes. To this end a series of twenty-two weekly lectures, with lime-light illustrations, has been organised, the lecturer being Mr. H. Crowther, the curator, and the objects lectured upon such as find representation in the museum. As the

accommodation is limited, it has been found necessary to restrict the attendance to some 50 per cent of the scholars in the fifth, sixth, and seventh standards of the Leeds elementary schools, about 350 children being received at each lecture. After the lecture, the scholars are taken round the rooms and shown the chief objects of interest in the museum. On a subsequent day a composition exercise, dealing with the objects coming under observation, is set. The scheme has received the sanction and support of the Leeds School Board and Leeds Church Day-schools' association, as well as the Leeds and District Teachers' association. Judging by the keen interest with which the children, both boys and girls, appeared to follow the observations of their lecturer and guide, this new method of training the young will be highly popular. The only wonder is that it was not thought of and acted upon before.

LIVERPOOL MUSEUM.—Liverpool is just now suffering from a strange fit of economy as concerns its museum. After spending many thousands of pounds on the erection of a stately addition to its building, there is considerable haggling over the necessary funds required for its equipment. Authority to borrow £22,000 for cases for the new extension has been obtained, but the committee are showing inexplicable hesitancy in spending the money, a proposal for the expenditure of only a twentieth part of this sum having been referred back. Another attempt at economy is a recommendation to discontinue the publication of the *Bulletin*, which has been prepared by the director and issued for two or three years past, the annual cost being less than £100. In reading the discussion, it is rather curious to note how some of the committee object to the idea of the Liverpool museum rivalling in its scope the scientific range of the British museum.

GLASGOW EXHIBITION.—This exhibition was closed on Saturday, November 9, after being open for six months, and there can be no doubt that it has been an enormous financial success. It is expected that the exhibition executive will, after closing their accounts, find themselves in possession of a handsome surplus of not less than £100,000, which will be handed over to the city corporation to be spent by them in the promotion of science and art. The *Times* says:—"The disposal of the surplus is likely to be a bone of contention in Glasgow. It seems to many to be the plain duty of the corporation to devote the whole of it to paying off the debt on the art galleries in which the pictures and sculpture and Scottish history collection of the exhibition were housed; but a disposition has been manifested to let that burden of between £100,000 and

£150,000 rest upon the shoulders of the ratepayer, and to spend the surplus in buying objects of art to fill the building. Some part of the money has been claimed, too, on behalf of new buildings for the Glasgow Technical college."

MEMORIAL TO SIR WILLIAM FLOWER.—A handsome brass has been placed in the council room of the Zoological society in Hanover Square to the memory of the late Sir William Flower, who filled the office of president of the society for more than twenty years. It records that in Sir William Flower the society lost a zoologist of the highest ability, and a most able and energetic president. It is also proposed to erect a commemorative tablet of Sir William in the natural history museum, at South Kensington, of which institution he was director for over fifteen years.

WHITECHAPEL EXHIBITION.—At the Whitechapel art gallery an exhibition, consisting chiefly of pictures by Scottish artists, was opened by Mr. Augustine Birrell on December 12, and is to remain open for six weeks. Nearly a hundred pictures have come from the International Exhibition at Glasgow. Six or seven fine Raeburns are to be included; and the show at Messrs. Forbes and Paterson's, and Mr. Heinemann's big volume on Raeburn have made the people who care eager to see as much of the great Scottish portrait painter as possible. The landscape painters, of both past and present, will be represented, and there will be examples of men like Wilkie, Phillip, and Dyce, as well as of the more modern Glasgow school. Altogether, the show promises to be one of the most important of the winter in East or West.

MUSEUM DEMONSTRATIONS.—A series of demonstrations, as they are called, or informal lectures on different portions of the collections in the National museum, Dublin, are being given during the winter months, as in previous years, commencing on November 28th. The object of these demonstrations is to inculcate on the public tastes a thoughtful inspection of the contents of the museum, and the advantages to be derived from the practical study of the different collections. In the first lecture on the 28th Colonel Plunkett dealt with the new objects in the museum. On December 5th Mr. Geo. Coffey discoursed on Ogham stones, of which there are some fine specimens in the museum, from the Royal Irish Academy collection, and on December 12th on early Christian metal-work. Dr. Brenan, R.H.A., will on January 9th and 10th lecture on embroidery and church vestments. Colonel Plunkett will deal on the 12th January with the enamels. Mr. Strickland on January 30th and

February 6th will treat on methods of etching and some water-colour painters. Mr. Lyster will on February 27th trace the history of the alphabet. Professor Johnson is down for two lectures, February 13th at 8.30 p.m. on the tobacco plant, and March 13th on weeds and how to get rid of them. Other demonstrations are by Count Plunkett, January 23rd; Dr. Pethybridge, February 20th, on the dispersal of fruit and seeds; Mr. Alabaster on March 6th. The natural history demonstrations will be by Dr. Scharff, Dr. Nichols, Mr. Holt, Mr. Lamplough, Mr. Ussher, Mr. Carpenter, Prof. Mettam, Mr. R. Barrington, and Professor Cole. Tickets are issued free, and as the number of tickets to be issued is limited it is requested that no one will ask for more than he is likely to use, as this practice results in depriving others who could use them of tickets.

ABROAD.

SPANISH MUSEUMS.—The Spanish minister of education has ordered that hereafter all museums shall be open the year round free, and any one allowed to make copies or photographs. He has also requested teachers to take their pupils frequently to the museums. This enlightened policy is much to be commended, for Spain has not heretofore offered those facilities for inspecting its museums that the searcher after knowledge might desire. On a very hot day in 1900, the editor of this journal spent an hour in interviewing various officials in the Royal museum in Madrid before he could obtain authority to enter the museum, where he wished specially to inspect the geological collections. After all the weary trouble spent in gaining the necessary permission to enter the museum he was greatly astonished to find that all the specimens in the cases were most carefully wrapped up, and not one of them was visible for inspection. The chagrin at first felt was quickly turned into amusement at this altogether novel experience.

ANTIQUITIES FOR THE AMERICAN MUSEUM.—Dr. Walter Hough has recently returned from a five months' exploring trip in north-eastern Arizona, bringing a large collection of archaeological and ethnological material for the U.S. National museum. Fifty-four or more sites were examined, and in 18 of these excavations were made comprising the ruins lying east of Holbrook, Arizona, in the Petrified Forest Reserve, ruins on the north border of the Apache Reserve, and ruins in the Jeddido Valley, Hopi Reserve.—*Science*.

BIRD-GROUPS FOR THE AMERICAN MUSEUM.—During the past summer, Mr. Frank M. Chapman, the associate curator

of the departments of mammalogy and ornithology, of the American museum of natural history, New York City, made an extended trip in the western British possessions. In Manitoba he secured material for groups of cormorants, Wilson's phalarope and the yellow-headed blackbird. In the Selkirk mountains he secured the specimens needed for a group of the American dipper or water-ousel.—*Science*.

AMERICAN MUSEUM ADDITIONS.—The American museum of natural history, New York City, has acquired an important collection of mammals and birds from the State of Vera Cruz, Mexico, which contains good series of specimens of several species not before represented in the museum collection. The museum has also received from the Duke of Loubat a valuable collection of mammals chiefly from the State of Jalisco, which adds much valuable material. A third collection of mammals and birds has been received from Venezuela, collected by Mr. Klages; and a final instalment of birds and mammals of the H. H. Smith collection from the Santa Marta district of Columbia has also come to hand.—*Science*.

CHILDREN'S MUSEUM.—The *Quiver* for October contains a description, by Mr. H. J. Shepstone, of a unique institution in Brooklyn, the children's museum:—The large and beautiful building of the Brooklyn Institute is close to Bedford Park, where literally thousands of children resort during the fine weather, and is undoubtedly an ideal place for a children's museum. The doors are opened to them every day between the hours of nine a.m. and six p.m. from March to December, and from two p.m. to six p.m. during the first three months of the year. The museum is on the ground floor, and occupies six rooms. The rooms are charmingly decorated in different colours, and all the cases are of proper height, so that the children can obtain excellent views of the various collections. These rooms are known as the model room, animal room, plant room, anatomical room, meteorological room, and lecture room. In the model room we find collections illustrating crystallography, the different crystals being placed in conjunction with models of them. Here also will be found useful ores and minerals. They are all labelled with great care, special attention being paid to simplicity, without departing in any degree from scientific accuracy. Upon the walls are many charts, and altogether there are some 900 exposed to view and kept in the chart room. They can be changed at will, and are most interesting, embracing nearly all of the subjects of science as well as most of the useful arts. Many of the botanical charts have a particular educational value, because they exhibit plants in all their details, life-size or much larger, and

show them from root to branch with details of flower structure, seeds, embryo, and other important botanical features. Two large series of charts from Germany and England deal with trees. The general habit of the tree is shown, together with details of its structure, which include both longitudinal and cross sections of the wood stems, especially such as are employed for building purposes. They are coloured to represent the real object, and are useful adjuncts to schoolroom work. In the model room will be found a splendid series of twenty-four anatomical models. Thus we find a silkworm five feet long, executed in papier mache; it can be separated, and the wonderful process of spinning the delicate fibres can be explained in an intelligible manner to quite a large audience, because of the very considerable size of the model. There is also a very fine model of a snail. This is three feet six inches in length, and dissects into a sufficient number of parts to reveal the entire internal anatomy of the animal. It is a splendid example of what can be done with papier mache. There are also models of the beetle and the honey bee. These are, of course, coloured to give them the appearance of life. Children go into ecstasies over such models. They will linger over them for some considerable time, and will go away with a better knowledge of the structure, form, ways, and habits of the animal after a lesson illustrated in the way we have described than by reading pages of description in a school book. A little sister, after inspecting the models and hearing all about the animals, will go home and bring her elder brother next day to see the "big snail and the great silkworm."

EGYPT EXPLORATION.—At the last ordinary general meeting of the Egypt Exploration Fund, Sir John Evans, the president, was able to announce quite a flourishing state of affairs. The income for the year showing a balance of nearly £2,000 more than the previous year. The objects obtained are divided between the museum at Cairo and the Egypt Exploration Fund, and Sir John Evans stated that they had reason to be thankful to the museum authorities at Cairo for the equitable and even liberal manner in which the produce of their excavations had been divided between them. The objects brought to England were first exhibited at the University College, then they were divided mainly between the United Kingdom, including her colonies, and the United States of America, but portions had also been assigned to some European States, the principle of division adopted being that each country should, as far as possible, share *pro rata* in accordance with the amount that each had contributed to the fund.

EXCHANGE AND SALE COLUMN.

Advertisements for museum specimens, books, fittings, or appliances can be inserted in this column. Sixpence for the first ten words, and threepence for every ten words afterwards.

FRANK SUTER & Co., Ltd.,

. . Electrical Engineers, . .

Designers and Manufacturers of Electric
Light Fittings.

SPECIALITY :

Picture and Museum Case Lighting . .

. . By Suter's Registered Reflectors.

FRANK SUTER & CO., Ltd.,

66, BERNERS STREET,

. . LONDON, W.

Marine Biological Association of the United Kingdom

Specimens of MARINE ANIMALS and PLANTS specially preserved for Museum purposes. For detailed Lists and Prices apply to

THE DIRECTOR, BIOLOGICAL LABORATORY, PLYMOUTH.

NS, Ltd., ESTAB.
1846.
LONDON, E.C.

Museums or Private Collections.
Sundries to the British Museum, &c.
of any description made to order.

Patented). 3/6 per gross

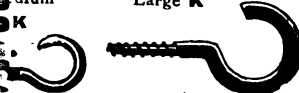
It has a sharp needle point,
set in any position in trays or
stands, &c. Altogether one of
introduced and very cheap.



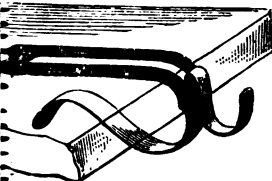
N 3.—12/- per gross.
biting specimens from edges of glass
or wood shelves.

Hooks for Cases, &c.
guaranteed truly tapped, bronzed
(non-corrosive).

dium Large K



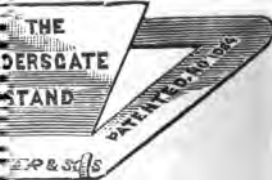
per gross. 10/- gross.



STEEL SHELF HOOK.
specimens from $\frac{1}{2}$ or $\frac{3}{4}$ inch shelf.
9/- per Gross.
which shelves at same price.



008. Price, 3/- per gross.
descriptive labels. Having two spikes
ely rigid when once pressed into
ple will be sent Free on application.



Dersgate Stand (Patented)
ing descriptive cards at any angle.
in. by 18 in. .. 10/- per gross.
in. by 24 in. .. 24/-

**Ltd., ESTAB.
1846.
LONDON, E.C.**

dries to the British Museum,
Museum, Horniman Museum,
Illustrations, and Samples, on



No. BT3.
The "Simplex" Shelf Clip.
Holding specimens from $\frac{1}{2}$ to $\frac{3}{4}$ in.
Specially useful for long narrow
labels.
per doz.; 15/- per Gross.



Glass-Topped Specimen Boxes.
White paper inside and black out-
side used at the Geological Museum,

Depth.	
in. by $\frac{1}{2}$ in. ..	18/- per gross.
in. by 1 in. ..	21/- "
in. by $1\frac{1}{2}$ in. ..	24/- "
in. by 2 in. ..	27/- "
in. by $2\frac{1}{2}$ in. ..	31/- "
in. by 3 in. ..	36/- "
in. by $3\frac{1}{2}$ in. ..	27/- "

Specimens are quoted A/y other size,
to order.

Specimens are made in the following sizes covered

in. ..	24/- per doz.
in. ..	30/- "
in. ..	36/- "
in. ..	42/- "
in. ..	48/- "
in. ..	60/- "
in. ..	72/- "



Neat Cardboard Tray for Specimens.
width, and finish as boxes No. 14,
but are $\frac{1}{2}$ in. high.

2	3	4	5	6
6	7	6	9	10

Larger sizes to order

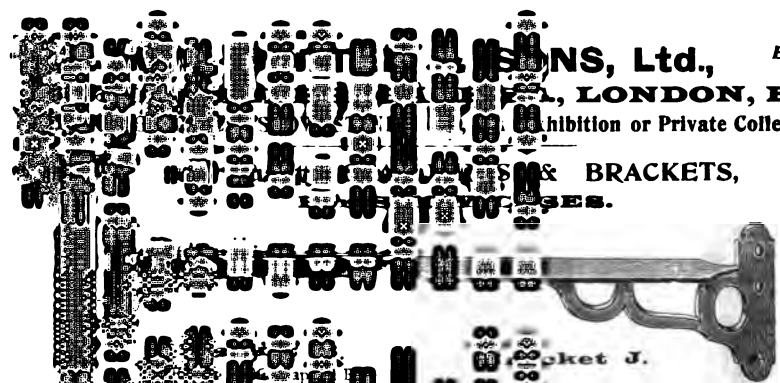
Board for Mounting or Writing.

Per doz.	
24 by 19, 6-sheet cardboard,	2/3
24 by 19, 8-sheet cardboard,	2/6
24 by 19, 12-sheet cardboard,	3/-
24 by 19, stout tinted board,	3/6
Ivory card, 24 by 19, thick,	4/6
Ivory card, 24 by 19, medium,	4/-
Ivory card, 24 by 19, thin,	3/6

above sizes at half the prices.

SONS, Ltd., ESTAB.
1846.
LONDON, E.C.
Exhibition or Private Collections.

LOCKS & BRACKETS,
KEYS & Hinges.



Bracket J.

Standard Bars
Quality and Finish.

Bars are stocked:—

BRONZED

10	12 inch.
2/3	2/9 each.
21	24 inch.
6/6	3/6 each.

IRON (Warranted).

10	12 inch.
1/6	1/9 each.
21	24 inch.
4/6	5/6 each.

BASES.

earnestly solicited to
well for many purposes.
compulsory. We quote
FULL VALUE. Packing
condition, carriage paid,

L TAPPED BAR; Brass, Bronzed, 1/2 per foot



not less than 4 feet.

Top Doors

ND VALUE, gin. high

weable Trays.

35/-	per foot.
30/-	"
25/-	"
22/6	"



**14.—Useful cabinet for private
Doctors or Duplicate Specimens.**
at wood covered cloth, brass handles.
15 by 12 by 8 (4 drawers) **16/6**
18 by 15 by 20 (5 drawers) **21/-**
20 by 18 by 12 (6 drawers) **25/-**
34 by 20 by 16 (8 drawers) **30/-**

Ltd, ESTD.
1846.

LONDON, E.C.

Private Collections.

DIMENSIONS.

Total height, 6ft. 3in. (excluding ornamental iron cresting and finials).

Table Height, 2ft. 6in. Depth, 4ft. 6in.

Total height of Show Case (excluding cresting), 5ft. 6in.

Height of upper part of Show Case, 2ft. 13in.

Depth of upper part of Show Cases, 14 in.

The lower portion of Show Case measures at its highest 5in. and at its lowest 4in.

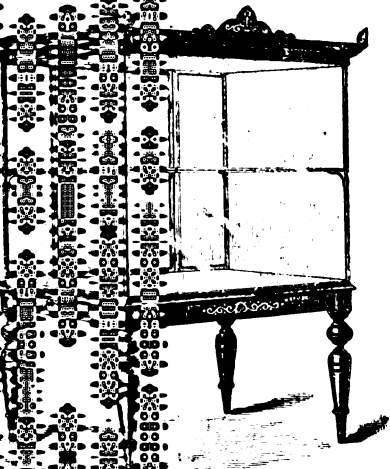
Bottom of Case is covered with Claret or Blue coloured Cloth. The under part of Case is fitted with Drawers, three in height and length, according to dimensions of Case. All Sashes are made on the "air-tight" principle and Glazed Plate Glass.

ft. by 4ft. 6in. by 6ft. 3in., 18 Drawers, £66 10/-

9ft. by 4ft. 6in. by 6ft. 24 Drawers, £78 10/-

12ft. by 4ft. 6in. by 6ft. 30 Drawers, £95

If delivered outside London, an extra charge is made for packing, according to size, varying from £3 upwards.



Any Plate-Glass Case.

round and top, carved pedestal with one full-sized plate-glass pane and brackets. Splendid finish.

B Quality, without pedestal or inside fittings.

£15 5 0	29 17 6
18 10 0	12 15 0
21 15 0	15 10 0
25 0 0	18 10 0

above, 37/6, 57/6 & 72/6 extra, made for all purposes—any plates and drawings supplied on application.

BOTANICAL SPECIMENS

FOR MUSEUMS.

CONES OF RARE CONIFERS.
INFLORESCENCES OF CYCADS,
CYCAS, ZAMIA, MACROZAMIA,
CERATIZAMIA, STANGERIA, ENCEPHALARTOS, &c.,
MALE AND FEMALE.

SECTIONS OF BRITISH AND OTHER TIMBERS.
SPECIMENS FROM THE TROPICS.
SPECIMENS IN ALCOHOL and other media.

Models of British Fungi.

ECOLOGICAL SPECIMENS.

ANATOMICAL SPECIMENS.

HERBARIUM SPECIMENS.

Insectivorous and Parasitic Plants.
SETS ILLUSTRATING ECONOMIC PRODUCTS.
PATHOLOGICAL SPECIMENS.
FOR PARTICULARS SEND FOR SPECIAL PRICE LIST.

J. BACKHOUSE & SON, LIMITED,
THE NURSERIES (Scientific Department,)

Telegrams: "BACKHOUSE, YORK
'Scientific.'"

YORK.

W. D. WEBSTER,

Home Court, 24, Palace Road, Streatham Hill,
. . LONDON. . .

**COLLECTOR OF ETHNOGRAPHICAL SPECIMENS,
EUROPEAN AND EASTERN ARMS AND ARMOUR,
PREHISTORIC AND OTHER ANTIQUITIES.**

Telegraphic Address: "ETHNICALLY, LONDON."

ILLUSTRATED CATALOGUE published every three months. Each copy contains 20 plates reproduced from photographs, and is subscribed to by all the principal Museums in the world. Subscription 10/- per year, post free, payable in advance.

A few bound Catalogues can still be obtained at the following prices:—

Vol. 1 contains Catalogues	Nos. 1 to 10	- -	30/-
Vol. 2	ditto Nos. 11 to 17	- -	20/-
Vol. 3	ditto Nos. 18 to 23	- -	25/-
Vol. 4	ditto Nos. 24 to 27	- -	25/-

The Collection consists of over 10,000 specimens from all parts of the world, any of which will be sent on approval on carriage being paid.

SPECIMENS BOUGHT OR EXCHANGED

EVERY MUSEUM SHOULD HAVE

A HEALTH SECTION

**BECAUSE IT IS IMPORTANT, PRACTICAL AND INTERESTING
IF DESIGNED ON POPULAR AND PROPER LINES.**

Advice and Help on this Subject can be obtained by application to

**THE HYGIENIC REFERENDUM,
FERRESTONE ROAD, HORNSEY, N.**

W. F. H. ROSENBERG, F.Z.S.

57, HAVERSTOCK HILL, LONDON, N.W.

Naturalist and Importer of Exotic Zoological Collections

Fresh Consignments in all branches of Zoology are constantly arriving.
Mammal and Bird Skins and Skeletons; Birds' Eggs; Reptiles; Batrachians; Fishes; Lepidoptera, Coleoptera and all other Orders of Insects; Arachnida; Scolopendræ; Shells, etc., etc, from all parts of the Globe.

PRICE LIST FREE.

SPECIMENS SENT ON APPROVAL

All kinds of Museum Requisites and Collecting Apparatus kept in Stock.

SPIRIT SPECIMENS FOR DISSECTION

Type Collections, representing Orders, Families, or Genera, made up at moderate rates.

Photographs of

Familiar Trees

Plants & Flowers

in their SUMMER and WINTER appearance, with enlarged views of their bark, leaves, flowers and fruit showing details of structure and growth.

MAY BE SEEN at the British Museum ; Royal Art Library, South Kensington ; University College, London ; University College, Liverpool ; Museum of Science and Art, Edinburgh ; &c., &c. Lists on application.

HENRY IRVING, The Rowans, BROMLEY, KENT.

MUSEUMS ASSOCIATION.

President :

Sir WILLIAM TURNER, K.C.B., B.SC., F.R.S., D.C.L., L.L.D.

Treasurer :

Alderman W. H. BRITTAIN, J.P., F.R.G.S. (Sheffield).

Hon. General Secretary :

E. HOWARTH, Museum, Sheffield.

The object of the Association shall be the promotion of better and more systematic working of Museums throughout the Kingdom. In order to promote a better knowledge of Museums, the Association shall meet in a different town each succeeding year.

That each Museum contributing not less than one guinea a year be a Member of the Association, and that individuals interested in scientific work be admitted as Associates on payment of ros. 6d. annually.

That each Museum be represented by three delegates, each having one vote. Each Associate to have one vote.

That each Museum belonging to the Association and each Associate receive one copy of the publications of the Association.

That a General Meeting of the Association be held annually, for the transaction of business, the reading of papers, and the discussion of matters relating to Museums.

MUSEUMS ASSOCIATION.

Some of the earlier volumes of the Report are nearly out of print, and Museums requiring complete sets should order them at once. Particulars can be obtained from the Secretary, Museum, Sheffield.

The Man as Museum-Curator.*

ALL those who have to do with museums, and not least the museum-workers of the United Kingdom, owe much to their colleagues of the United States of America. Whether it be through their enterprise and ingenuity in devising new methods of exhibition and of curating, through their numerous annual reports, well illustrated and rich in suggestion, or more directly through their well known generosity, all of us share a benefit which we thankfully acknowledge. By the issue of the volume before us the United States National museum makes a yet deeper claim upon our gratitude.

We all know of George Brown Goode, for many years assistant secretary of the Smithsonian Institution, in charge of the United States National museum, and members of the Museums Association at any rate are thoroughly familiar with that remarkable codification of "The principles of museum administration" with which he honoured our sixth annual meeting (Rep. Mus. Assoc. for 1895, pp. 69-141; 1896). The rare combination of a practical attention to details with a wide and lofty outlook, which characterises that treatise, must have made those who knew Brown Goode merely as its author anxious to learn more of such a writer; while they who were privileged to have some, however little, personal acquaintance with the man will peruse this memorial of him with a yet keener delight.

The volume opens with a report of the meeting held at Washington on February 13, 1897, to commemorate the life

* A memorial of George Brown Goode, together with a selection of his papers on museums and on the history of science in America. Being Report of the U. S. National Museum, Part II., in Ann. Rep. Smithsonian Institution for the year ending June 30, 1897. 8vo., xii. + 516 pp. Frontisp. & cix. plates. Washington, 1901.

and services of Brown Goode, comprising addresses by Hon. Gardiner G. Hubbard, Dr. S. P. Langley, Hon. W. L. Wilson, Prof. H. S. Osborn, and Prof. W. H. Dall, all couched in felicitous and sympathetic language. The next twenty-one pages are devoted to a memoir of Goode by Dr. S. P. Langley, secretary of the Smithsonian Institution. Then come reprints of the following papers :—" Museum History and Museums of History " (*Papers Amer. Histor. Assoc.*, 1889); " The Genesis of the U. S. National Museum " (*Rep. Smithsonian Inst.*, 1893); " The Principles of Museum Administration " (*Rep. Mus. Assoc.*, 1896); " The Museums of the Future " (*Rep. Smithsonian Inst.*, 1891); " The Origin of the National Scientific and Educational Institutions of the United States " (*Papers Amer. Histor. Assoc.*, 1890); " The Beginnings of Natural History in America " (*Proc. Biol. Soc. Washington*, 1886); " The Beginnings of American Science: the third century " (*Proc. Biol. Soc. Washington*, 1888); " The first National Scientific Congress (Washington, April, 1844), and its connection with the organization of the American Association " (*Proc. Amer. Assoc.*, 1892). A very complete list of " The published writings of George Brown Goode, 1869-1896," is contributed by Mr. R. I. Geare. Finally, there is a well-compiled index. The frontispiece is a heliotyped reproduction of a photograph of Goode; and the hundred and nine plates are beautifully printed reproductions in half-tone of the portraits of men interesting from their connection with American science. These are arranged in alphabetic order, and not near the place where each person is mentioned in the text. It is nowhere so stated, but we may well suppose that many of these plates have been reproduced from the collection of portraits formed by Brown Goode himself. As was perhaps inevitable in a work of this character, there is a rather irritating amount of repetition, not merely of thoughts, but of sentences, paragraphs, and whole pages. A few editorial excisions would have been pardoned, and we could also have spared some too obtrusive misprints. Apart from this, there is nothing in the volume that a museum-curator or any other museum-lover should not be sincerely glad to have in so handy a form. Knowing the generosity of the United States

Government in these matters, we recommend every such person to apply to the secretary of the Smithsonian Institution for a copy.

The outside world, it is to be feared, usually regards the museum-curator as but one of the strange, dry specimens to be found within the walls of the museum. A curator is sometimes seen (through a glass door) to move, as he registers or arranges his fossils or his potsherds; but to the public the movement appears so automatic, the acts so mechanical, that enthusiasm, or it may be humour, in a museum official is apt to shock them as something out of place. Unfortunately there is always a danger of this conception becoming true rather than ridiculous. Each of us has to guard against falling into a mechanical method of work, against reckoning results by the number of specimens mounted or catalogued, against sinking into the crevasses of specialization, where the sympathies of humanity no longer reach us. The routine work of a museum, especially of a great museum, drives one in this direction, and resistance to this dull force does not always count for a virtue. But besides this there is something in the mere physical conditions of modern museum work that tells in the same way. It will perhaps seem strange to our descendants that a museum—the home of the muses, the treasure-house of the free manifestations of unfettered genius, the wonder-chamber for the display of the changing shapes and pulsing life of the forest, the prairie, and the ocean—should ever have been some ponderous prison in the depths of a city, with stagnant air, veiled light, and monotonous order, with its beauties of art, its marvels of nature inexorably divorced from the surroundings for which they were created, exhibited and studied as though the thing in itself were the all, relation and reaction of no account. The keeper of such a museum, labouring day in and day out on the treadmill of uninspired officialdom, is to be pitied rather than blamed if he forgets the breath of the moorland, the rushing of the waves, and all that larger culture which comes in the conflict of man with the open world.

To us then, whether fighting against or yielding to the present circumstances of our calling, there comes as an inspiration or as a reproach, this picture of one who, ardent

lover of the museum idea though he was, never ceased to be at all points a man. It is not so much by his precepts, admirable though they are, nor by any of his greatly conceived and minutely executed schemes of exposition, that George Brown Goode has benefited the museum-workers of his own country and of the world. It is because his whole life stands for a proof that the successful curator may be, say rather that the great museum administrator must be, a man of enthusiasm, of ideas, of strictest honour, of sincerity, with the grip and devotion of a specialist, yet with the wisdom born of wide experience, with an eye for the most meticulous detail, but with a heart and mind responsive to all things of life, art, and nature. In a sense deeper than that of Chremes, he must say "*Homo sum : humani nil a me alienum puto.*"

So cheering are these thoughts that it may be worth while to illustrate them further by passages from this volume. The mere existence of the book is sufficient testimony to the value set on Brown Goode's official work by his colleagues and by the Regents of the Smithsonian Institution. It was in 1873 that he first became connected with the Smithsonian, and shortly afterwards he settled in Washington as a member of the permanent staff, which then numbered only thirteen persons. When Prof. Baird became secretary of the institution "Dr. Goode," writes Dr. Langley, "took the museum work upon his willing shoulders. In 1881, when the new museum building was completed, and the United States National museum really organized, Mr. Goode, then thirty years of age, was made assistant director. In that year he prepared a circular. . . which set forth a scheme of administration for the museum so comprehensive in its scope, so exact in its details, so practical in its ideas that it is with but few modifications still the guide for the museum staff. On January 12, 1887, Professor Baird, whose health was then failing, appointed Mr. Goode as assistant secretary of the Smithsonian Institution in charge of the National museum, and from that time until his death he had the fullest charge of the entire administration of the museum." "The changes which have taken place in the museum in that time are more his work than any other man's, and when we find that the number of persons employed has

grown from thirteen to over two hundred, and the number of specimens from 200,000 to over 3,000,000, and consider that what the museum now is, its scheme and arrangement, with almost all which make it distinctive, are chiefly Dr. Goode's, we have some of the evidence of his administrative capacity."

From the book before us we may learn the secrets of this success : first from the expressed views of Dr. Goode as to the qualities needed in a museum curator or director ; secondly from the accounts given by others of Dr. Goode himself.

"As to the qualification of a museum administrator," he writes (p. 253), "whether it be for a museum of science or a museum of art, it is perhaps superfluous to say that he should be the very best obtainable, a man of ability, enthusiasm, and, withal, of experience ; for the administration of museums and exhibitions has become of late years a profession, and careful study of methods of administration is indispensable. If the new administrator has not had experience he must needs gain it at the expense of the establishment which employs him—an expense of which delay, waste, and needless experiment form considerable elements. No investment is more profitable to a museum than that in the salary fund. Around a nucleus of men of established reputation and administrative tact will naturally grow up a staff of volunteer assistants, whose work, assisted and directed in the best channels, will be of infinite value." Similarly (on p. 206) : "Intelligence, a liberal education, administrative ability, enthusiasm, and that special endowment which may be called 'the museum sense,' are prerequisite qualifications." Or again (p. 237) : "Museum administration having become a profession, the feeling is growing more and more general that it is one in which talents of a high order can be utilised. It is essential to the future development of the museum that the best men should be secured for this kind of work, and to this end it is important that a lofty professional standard should be established." Here the thought may be interposed that such raising of the standard will never come from without, but that it is in the power of each one of us to move it a trifle higher by his own example.

The museum recluse is fortunately, says Brown Goode, becoming an extinct type. In addition to wide intellectual sympathies there is needed a human sympathy: "No man is fitted to be a museum officer who is disposed to repel students or inquirers, or to place obstacles in the way of access to the material under his charge." None the less "each member of a museum staff should become an authority in some special field of research, and should have time for investigation and opportunity to publish its results." But the museum-specialist need not give up the direct study of nature. "The museum which carries on explorations in the field as a part of its regular work has great advantages over other institutions in holding men of ability upon its staff and in securing the most satisfactory results from their activities. No work is more exhausting to body and mind than the care of collections, and nowhere are enthusiasm and abundant vitality more essential." The open-air work not only gives a man better knowledge of, and a livelier interest in, his material, but reinvigorates him for the labour of its study and arrangement.

"Carelessness is the unpardonable sin in a museum worker." "The success of installation, like that of every art, depends largely upon attention to minute details." Such aphorisms scattered up and down the pages are golden rules for the museum curator. How they may be put into practice is to be seen from the life and work of their author.

George Brown Goode is well known to students of fishes as one of the most learned writers on that subject, in which he paid as much heed to the practical applications as to the purely scientific aspect. But he was also a historian of science and a genealogist, seeking always the personal and human element. He was widely read in imaginative literature, practically familiar with music and the graphic arts, a lover of old books, a collector of all manner of literary trifles, and withal a true naturalist in the old-fashioned sense. But it was rather his moral qualities that were his key to success, "and if there was one which more than another formed the basis of his character, it was sincerity—a sincerity which was the ground of a trust and confidence such as could be instinctively

given, even from the first, only to an absolutely loyal and truthful nature." This "was united with an unselfishness so deep-seated that it was not conscious of itself, and was, perhaps, not always recognized by others." "Connected with this was an absence of any wish to personally dominate others or to force his own personal ways upon them. . . . Apart from his official duties, he obtruded himself upon no one with advice, and his private opinion was to be sought, not proffered. His insight into character was notable, and it was perhaps due as much as anything to a power of sympathy that produced a gentleness in his private judgment of others. . . . Associate this tolerance of those weaknesses in others, even which he did not share, with the confidence he inspired and with this clear insight, and we have some idea of the moral qualities which tempered the authority he exercised in his administrative work, and which were the underlying causes of his administrative excellence." He led, rather than drove. But with all his sympathy, there was no lack of firmness. "He knew how to say 'No,' and said it as often as any other, and would reprehend where occasion called, in terms the plainest and most uncompromising a man could use."

The quotations in the last paragraph are from the address of Dr. S. P. Langley. Many of the ideas are repeated in the addresses of others, showing that the high opinion of Goode was one shared by all classes of men. Dr. Dall gives an interesting account of the duties that fall to one in Goode's position, duties which he most thoroughly performed. Among other things he says: "Lest engrossment in a speciality breed indifference to progress in common, it is of the highest importance that the leader in a band of workers shall use every opportunity of emphasising their joint responsibility to science and to the public, for whose entertainment and instruction the museum is supported by public funds. This duty Goode never forgot, and by example and precept he continually stimulated each and every one to his best efforts."

Dr. Th. Gill, in reviewing Goode's scientific career, writes: "For signal success in the direction of a great museum, special qualifications are requisite. Only some of them are a mind

well trained in analytical as well as synthetic methods, an artistic sense, critical ability, and multifarious knowledge, but above all the knowledge of men and how to deal with them. Perhaps no one has ever combined in more harmonious proportions such qualifications than G. Brown Goode. In him the National museum of the United States and the world at large have lost one of the greatest of museum administrators."

It is sad to think that such a man suffered much from ill health, brought on by too unremitting attention to his duties at an early period of his career, and that he died at the premature age of forty-five. On the other hand, we who love museum work, who feel with our departed colleague that the museum should become more and more an important factor in national life, that our work is not one hidden in a small corner, detached from the stress and flow of human progress, but a powerful engine in the material and moral improvement of the race—we museum men should be proud to claim George Brown Goode as one of ourselves, glad that in so short a span he proved the capabilities and the loftiness of our common calling.

F. A. BATHER.

On the Arrangement of Mineralogical Collections.

By J. G. GOODCHILD, F.G.S., F.Z.S., of the Geological Survey,
Edinburgh Museum of Science and Art.

[Paper read at the Edinburgh Conference, 1901.]

WHEN the arrangement of a collection is under discussion, four different classes of visitors have to be considered. These are:—(1) the general public, (2) the student working for examination purposes, (3) the practical man, who looks upon minerals only from a commercial point of view, and (4) the scientific student. In a large public museum the needs of all four classes ought to be steadily kept in view; and, where the specimens and the available space permit, the requirements of each should have a fair share of the curator's attention. In the Scottish Mineral Collection in the Edinburgh Museum of Science and Art, which has grown up to its present extensive proportions during the last thirteen years under the charge of the present writer, these principles have been steadily borne in mind, and, as far as possible, carried into practice. A few notes upon the methods adopted may, therefore, not be without their use to the readers of this journal.

Firstly, as regards the general public, who represent fully ninety per cent. of the visitors, it may be safely assumed that they know but little, and care less, about mineralogy, but that they are ready to be interested if the matter be presented to them in the right way. Therefore, in planning the present arrangement, we divided the collection of Scottish Minerals into two primary categories. In one of these was grouped the collection intended for the use of scientific and other students, and in the other was placed all specimens not needed for the last named purpose, which were of such a kind as a dealer in minerals would select for display in his shop window. These, again, were divided into two. One of these included the remarkably fine collection of polished Agates, or Scotch Pebbles, presented by Mr. Thoms, of St. Andrew's, and the other included all the remainder. Special show cases were constructed for

these, in which the leading principle borne in mind was to place the specimens in such a position as to be as near as possible to the eye, consistent with their being displayed to the best advantage. Printed labels, set in larger type than is adopted elsewhere in the collection, give as much information as possible of the kind likely to be of interest to the general visitor. Each case is conspicuously lettered, and arrows painted on the sides of the cases point out the route to be followed by those who wish to see that part of the collection in systematic order. As the specimens are arranged in the same order as those in the systematic part of the collection, a visitor has an opportunity of studying all that is likely to be of interest to him, and that in a manner both pleasant and profitable to himself. For these cases a special guide is in preparation, on the lines followed by the present writer in the "Guide to the Minerals in the Blackburn Museum." It may be remarked here that the valuable and extensive Raith Collection, belonging to Mr. Munro-Ferguson, at Kirkcaldy, is being arranged by Mr. Wilbert Goodchild on the same principle. The Agates above referred to are displayed in ebonised cases 7 feet high by 3 feet wide by 1 foot from the central partition to the face of the glass on either side. The shelves are inclined at 70 degrees from the horizontal, and are covered with maroon-coloured cloth—that colour having been found to be the best back-ground for the purpose. The agates are arranged in such a manner as to be easily seen, and those that need a lens to make out their structure are fastened within an inch of the glass. As the cases, shelves, and specimens, are all distinguished by numerals, the visitors can easily follow the description in the published guide specially written for them by the author of this note.

Secondly, as regards the student working at mineralogy for examination purposes—an important section in Edinburgh—a special series of specimens has been set apart. Usually such a student has need to make himself acquainted with the chief rock-forming minerals, and with some few others which play a more or less important part amongst the common things that he should know. Three cases have therefore been devoted specially to this purpose. In these the rock-forming minerals take a

leading place, and are primarily grouped under the headings of Essential Minerals of Rocks, the Accessory Minerals, and, finally, Minerals of Secondary Origin. Those which it is of first importance that a student should be familiar with are placed in the front rank, as close to the glass as possible, and those of lesser importance rank after rank behind. All the cases have been raised sufficiently high to admit of students of average height resting their elbows on the front edge of the case without any stooping—in other words, the cases stand about four inches higher than is usual. No one has yet complained of the innovation, while many have expressed their gratitude for the comfort and ease the present arrangement has afforded them. It seems to me little short of a scandal that the practice of making visitors bend so much in order to study the specimens in a case is still followed in so many museums where it would be an easy matter to make the change. This is one of the reasons why visits to museums are less in favour than they ought to be, and unnecessary noises and bad ventilation are amongst the others.

In Edinburgh it has been found possible to have a series of trays containing large mineral specimens left out for unrestricted examination by students. I introduced the practice some twelve years ago, and have always found it to work satisfactorily. Only specimens of large size are thus used; and, of course, nothing that cannot easily be replaced if damaged or lost is thus left to the care of the students. A bottle of weak hydrochloric acid, and an arrangement for testing the streak and the hardness of the minerals, are placed so that any visitor who wishes may use them. The plan has worked very well, and there has rarely been any cause for complaint regarding any abuse of the privileges thus given to visitors.

(3) The needs of the miner and of practical men in general have also to be considered; and if I had an opportunity of doing so I should supplement the other collections by a series of minerals classed on a metallic basis. Very commonly a visitor may wish to see, say, all the ores of copper, or of iron, &c., together, without having to go from one case to another to get what he wants. The fine collection of minerals

in the Jermyn Street Museum is arranged on this principle, and there can be no doubt that, for general purposes, a practical man finds it much the best. The only suggestion upon this head it occurs to me to make is that the specimens should always include a series representing only what one may expect to find, and should not be fine or picked specimens. The general arrangement adopted at Raith is as follows:—(1) Minerals such as sulphur, graphite, gypsum, salt, &c., of special use in the arts; (2) gangue minerals; (3) the ores of the metals, partly as anyone might find them, *i.e.*, not picked specimens; (4) rock-forming minerals; (5) gems and ornamental minerals; (6) the hydro-carbon compounds. This plan has been followed at Raith partly with reference to the lighting of the room in which the specimens are exhibited; but there is no valid reason why it should be in any way altered in other museums.

(4) In regard to the requirements in the case of a mineral collection intended for scientific purposes there cannot be much room for doubt. The collection should be classed under four sub-heads. (a) Should consist of a series of specimens illustrating such of the physical characters of minerals in general as can be illustrated by actual examples in a museum, and these should be accompanied by the fullest possible descriptive labels. There can be no better illustration of what is required in this respect than the most valuable series in the window cases in the national collection at the Natural History museum, Cromwell Road. (b) Ought to illustrate Crystallography as far as possible by actual specimens as well as by models of crystals. There should also be a series of maps on the three projections most commonly used, *i.e.*, stereograms, gnomonograms, and maps on Quenstedt's Linear Projection, and these should be supplemented by a series of spheres (wooden balls will do) on which the zones are drawn and the poles of the chief forms marked by small pins, and further denoted by their respective indices. If this were done properly much of the prevalent aversion to Crystallography would be done away with. (c) This, which is intended to illustrate Mineralogy proper, may consist either of a general collection without reference to the minerals of any particular country, or

it may be restricted, like that of the fine collection of Scottish minerals under the present writer's charge, to the minerals of some special district. In any case the arrangement should be on a recognised scientific basis. In the case of the Scottish mineral collection the arrangement follows that which is adopted by Dana, in the 6th edition of his *System of Mineralogy*, and which, therefore, there is no need to describe further. As far as the arrangement in the cases is concerned each specimen is placed in one of a row of shallow wooden trays, above a loose card, which can easily be replaced when soiled. Strips of wood $1\frac{1}{2}$ inches across separate the rows of trays and serve to support the descriptive label. Specimens of these are given here:—

401

DATOLITE

Combinations: (6-3), $amxgm_xc$.
Group of translucent crystals coating the joint faces of a basic eruptive rock. Associated with Prehnite, Pectolite, Analcime, Natrolite, &c.

First railway-cutting W. of BARNTON GATE STATION, Edinburghshire; 32.

GOODCHILD, "Min. Scot." II.

Presented by Mr. Wilbert Goodchild.

407

40

EPIDOTE (*Withamite*)

Combinations: $acnr$

Minute crystals elongated parallel to b , {010}; lustrous, translucent, and of a purplish-red colour.

They occur filling, or lining, former vapour-cavities within an Andesitic lava of Devonian age, which has been affected by thermo-metamorphism.

AN BODACH, Glencoe, Argyllshire; 33 SE.

Dudgeon Collection. 78-49-253.

In the top left-hand corner is placed the registration mark, of which the first figure is the species number in "Dana," and the second is the number of the individual specimen of that species in the Scottish mineral collection. Following the name of the species comes that of its variety, which is given in hair-line type. Then comes a description of its crystalline combinations, the symbols employed being those used by Dana. Next is a description of its associated minerals, usually stated in their order of deposition, and then of its mode of occurrence. The locality is defined as fully as knowledge permits. Finally, in the bottom left-hand corner is printed the name of the donor, and in that in the right any published reference to the specimen noticed. Suitable labels of larger size, relating to the species and its taxonomy, are placed in connection with each section.

Lastly, the writer of this article has systematically examined a large number of crystals in the collection, and after determining their forms, has made portraits of them exactly as they occur, and without "restoring" them in any way. The individual peculiarities of each specimen are thus brought clearly before the eye of the visitor, who is not left to puzzle out the relationship of the faces to each other, as he would have to do if they were presented in ideal symmetry, which but rarely occurs in nature. The crystals so drawn are mounted on corks, which, in their turn, are fastened with proper orientation on to the drawings.

In other cases, where the crystals have been drawn without being detached from the matrix, they are clearly indicated by pointers of blue paper fastened on to the specimens, so that the particular crystal referred to in the drawing, or in the description, may be exactly pointed out. A few crystal models, to shew the species in the ideal symmetry shown in text-books, are placed alongside. Lastly, the geometrical relationship of the different forms to each other is shewn in many cases by stereograms or other maps, mostly prints from "The Mineralogy of Scotland."

Any analyses that have been made are printed and placed alongside the specimen to which they refer. In the Scottish Mineral Collection nearly six hundred such bear the name of Dr. Heddle.

In the third and remaining sub-division, should be placed examples of pseudomorphs, which should be so placed as, if possible, to occupy a position midway between the collection of minerals and that of the rocks, if there be such.

As regards the scope of any guide-books published in connection with such collections, I am strongly in favour of having two or three separate pamphlets, to be sold for not more than 2d. each, rather than for one larger one. The advantage of this plan is that the general visitor can choose what suits his requirements best, and does not have to pay for what he does not need.

Oxford Museums.

THE "Reports of the University Institutions for the year 1900," Oxford, 1901, contains much interesting information relative to the museums. We first note that Professor Ray Lankester has presented to the department of comparative anatomy a piece of the skin of the sub-fossil South American animal *Grypotherium* (or *Neomyiodon*), of which he also recently presented a piece to University College, London. Other interesting acquisitions are the rare armadillo *Chlamydophorus truncatus*, a large tarpon (*Megalops atlanticus*), the lowly mollusc *Proneomenia aglaopheniae*, the skeleton of an African elephant, a collection of Palaearctic land-snails to illustrate local races and the distribution of terrestrial species, and a quantity of material collected on a recent expedition to Madeira by Prof. Weldon and others. A collection of skulls and bones illustrating the structural characters of the extinct and living races of man has been placed on exhibition. The curator of the Pitt Rivers museum, Mr. H. Balfour, has arranged exhibits of shields and body-armour, of decorated spears from the Solomon Islands, of bows, blow-guns, &c., and of several smaller objects. The bows, &c., are now placed in wall-cases under glass, while the reserve material is stored in the same cases behind false backs, a dodge of which curators burdened with the over deep cases of a past generation may like to be reminded. This museum has been greatly enriched by the Norman Hardy collection from the South Pacific and Australia, the H. Martyn Gibbs collection from South America, the Mary Kingsley collection from West Africa, also a collection obtained by Mr. D. Randall MacIver amongst the Kabyle and Chawia people of Algeria, including an extensive series of characteristic pottery, and a collection of Ainu objects made by Father J. Rousseau of the French Mission at Hakodate. But when we mention that over twenty-four pages are closely filled with a list of the year's accessions, the impossibility of giving here any idea of the multifarious activities of Mr. Balfour may be appreciated. Under Prof. Poulton similar activity reigns in the Hope (entomological) collection, and the Oxford under-

graduate will no longer have an excuse for informing the examiner that an insect may have three, four, or five legs, but more often none. The list of accessions occupies seven pages, and special mention is made of the W. B. Pryer collection of N. Bornean butterflies, and of a splendid partial albino female of the high-brown fritillary (*Argynnis adippe*) captured at Monks Risborough in 1896. Large collections were made by Prof. Poulton himself in the Balearic Islands. Prof. Sollas reports progress in the lengthy work of preparing the jurassic fossils for exhibition, and Prof. Miers has continued the labelling and registration of rocks and minerals. The Ashmolean museum has received much needed additions to its building, and its keeper, Dr. A. J. Evans, contributes a report which is much more readable in character than the others in this volume. The chief accessions to the collections during the past year have been due to the large contributions from the Egypt Exploration Fund and the Egyptian Research Account. The acquisition of the gold boss from Tomassos constitutes a valuable accession to the unique collection of "Hittite" seals, and some Greek vases of exceptional beauty and interest have been added to the classical department.

New Zealand Museums.

IT may be remembered that in the fifth report of the Museums Association for 1894, p. 207, a rather melancholy account was given of the Colonial museum at Wellington, New Zealand. Things do not seem to have improved during the past few years, if we may judge from a description recently published by a travelling geologist, Professor G. Boehm, of Freiburg, in Breisgau (*Zeitschr. deutsch. Geol. Gesell.*, lii., p. 171). "The collections there," he says, "are in a sad state. The few fossils exhibited are unarranged, without labels, though in part provided with numbers referring to a catalogue by Sir James Hector. It is impossible to obtain from this collection any conception of the palaeontology of New Zealand. Still more impossible is it to discover what places one might visit with an expectation of geological or palaeontological results. Thus,

I saw some good ammonites, apparently of the *Humphriesi* group, from the above-mentioned locality Kawhia; but as to the spot where they were found, I could obtain no information whatever. Very interesting fossils are said to occur in the Hokonui hills, in the south of South Island; but all that is visible are some wretched fragments. The same is the case with the Devonian of Reefton and the chalk of Amuri Bluff. In the thirty-second annual report on the Colonial museum, 1898, p. 22, under the heading 'Geological,' Sir James Hector writes: 'The New Zealand collections alone embrace over thirty thousand specimens. A very large number of specimens which have been collected at great expense still remain unpacked in some five hundred boxes, stored under the museum.' It might have been thought that New Zealand, with all its wealth and prosperity, was quite in a position to afford some accessible place for these probably most costly treasures." This state of things appears all the worse by comparison with the excellent museums of Auckland, Christchurch, and Dunedin, all of which are favourably commented upon by Professor Boehm. (See also the above-quoted report.) Even in the little town of Wanganui in North Island "a private society has established a museum, which is quite admirably managed by Mr. Drew, a jeweller and watchmaker. The chief objects of interest are fossils from the later Pliocene, which is remarkably fossiliferous in the neighbourhood of Wanganui."

It is clear that there are to be found in New Zealand, not only treasures of profound interest to all branches of science, but also the knowledge, intelligence, and enthusiasm needed for their proper study, arrangement, and display in museums. The one thing that is lacking is some appreciation by the Government of the value of these things, sufficient to inspire it to devote adequate funds for the performance of those duties which it has—perhaps reluctantly—taken upon its own shoulders.

Irritating Insects.

INSECTS are often irritating creatures, though it is usually in the summer time that they make themselves most unpleasant. Their tendency to create temper is apparently not confined to one particular season, for they have just now been the cause of quite an acrid outburst in the daily press of London, and it has all arisen through the retirement of Dr. A. G. Butler, the assistant keeper of the zoological department, in charge of the entomological section. Under Dr. Butler there were eight assistants in this section, the next in command being Mr. C. O. Waterhouse, and, according to the law of seniority, he would in the ordinary way have succeeded Dr. Butler. Mr. Waterhouse, has, however, been passed over, and a junior assistant has been appointed to the higher post, and as this junior assistant bears an honoured title, and is supposed to be a man of wealth, the papers are scenting favouritism. It is said that, owing to the war, the government are anxious to cut down expenses in other departments wherever possible, and, as the retiring assistant becomes entitled to a pension, they wish to put into his place a wealthy man, so as not to have to give any increased salary. The unfairness of such a proceeding, not to mention its obvious meanness, makes it impossible to believe that our British government would descend to such contemptible conduct. But what still more tells against any such motive being at work is the high code of honour that prevails amongst our English aristocracy, and which would make it impossible for any member of it to use the fortuitous advantage of wealth to appropriate the position which belonged to an equally able and deserving colleague.

General Notes.

AT HOME.

In our article last month on Dr. Henry Woodward it was perhaps not made clear that Mr. R. Bullen Newton, F.G.S., senior assistant in the geological department of the British museum, was one of those on whom the heavy labour of installing the national geological collections in their new home at Cromwell Road fell from the outset. Mr. R. Etheridge, F.R.S., though ranking as his senior, actually came to the museum a year later.

Dr. Arthur Smith Woodward has succeeded Dr. Henry Woodward, as keeper of the geological department of the natural history museum.

Sir George Francis Hampson, Bart., has been appointed acting assistant keeper of the zoological department of the British museum, in charge of the entomological section, in place of Dr. A. G. Butler, who is retired. Sir George Hampson entered the service of the trustees by special appointment little more than five years ago, and has since then produced three volumes of the "Catalogue of Lepidoptera Phalaenae." He is just 42 years of age.

The Museums and Gymnasiums Act (1891) has now been extended to London. So far as we are aware, the only museums in a position to avail themselves of it are the Horniman museum and the Whitechapel museum, the latter now to be officially known as the Stepney borough museum. Other borough museums will now have a better chance of arising. The next step, a much-needed one, should be the extension of this act to Scotland.

MUSEUMS AS SHOP WINDOWS.—From the Warrington museum has been received a catalogue of a loan exhibition of pictorial photographs, a perusal of which tends to engender mixed feelings. Some of them are old and historically interesting, as representing the earlier stages of photography, while others are quite modern and commercially interesting, with the tradesmen's prices attached to them. A collection of photographs has decided attractions for the "man in the street," not forgetting the woman; but it is a doubtful policy, to say the least of it, for a museum to lend itself to tradesmen for the exhibition and sale of their wares. If a photographic shop is to be opened in a museum, why not also have a china shop? pottery being even more amenable to artistic treatment, while a millinery department might be made exceedingly pretty and altogether "fetching."

HUGH MILLER CENTENARY.—A meeting has been held at Cromarty, to make arrangements to celebrate the centenary of Hugh Miller, the distinguished Scottish *litterateur* and scientist. Provost Junor presided, and there was a representative attendance. A letter of apology was received from Sir Archibald Geikie, who said, "I am probably almost the only living geologist who knew Hugh Miller intimately. As long as I live I shall cherish the recollection of his kindness to me in my youth when starting on my scientific career. He well deserves that the centenary of his birth should be fittingly celebrated. No man of his time did so much to spread an interest in geology and in science generally among English-speaking people all over the world. The story of his life, as told by himself, is one of the classics in our literature, both from the admirable moral lessons it conveys, and for that consummate mastery of our language which it displays. Personally, therefore, from my own grateful feelings for all that he did for me, and on public grounds for his great services to literature, to science, and to the cause of social progress among his fellow countrymen, I hope the centenary celebration will be crowned with all success." It was agreed that a Miller's institute should be erected in Cromarty, Hugh Miller's birthplace, consisting of a library, a reading-room, and a museum; and that an effort should be made to purchase the old house in Cromarty where Miller was born, with its interesting collection of scientific exhibits collected by the distinguished scientist.

ABERDEEN ART GALLERY.—At the annual meeting of the subscribers to this institution, Mr. Hugh Macdonald, the secretary, submitted the report of the committee of management, which showed a credit balance of £85. 2s. 1d. After, however, charging the deficit on last year's account of £53. 2s. 6d., the account closed with a reduced debit balance of £14. 14s. 6d. The period covered by the report extended from 31st March, when the Macdonald collection of paintings was opened to the public by Colonel Allardyce, on behalf of the late Mr. Macdonald's trustees, and the number of visitors for the period was 50,828, the largest in the history of the institution. The addition to the gallery buildings for the proper reception and exhibition of the Macdonald collection is now nearing completion, and the committee hoped that the collection would be permanently placed by Whitsuntide next. Among the additions made to the permanent collection during the year was La Thangue's painting "The Plough Boy," presented by the Town Council. The thanks of the committee were given to the Town Council for their contribution, and also to the Aberdeen Artists' Association for their donation. In moving the

adoption of the report, the chairman said there were few cities which had a more distinct and instinctive love of the beautiful than Aberdeen, and he looked forward to a great future for the gallery, when once they got the citizens thoroughly interested in it. Ex-Bailie Walker seconded, and the report was approved. The retiring representatives on the committee of management were re-elected. Lord Provost Fleming, in moving a vote of thanks to the chairman, said that gentleman was setting himself to place the institution on a sound basis, by having it put either on the rates, or by devising a system that would secure a regular income, to enable the place to be carried on in an efficient manner. The policy of making admission to the gallery free had been justified by the great increase of visitors.

FENIANS AND "DEVILS."—The late primate, Dr. R. S. Gregg, whose premature death has been so great a loss to the Church of Ireland, told me (says Canon Staveley in *Temple Bar*) a story of the late Rev. Samuel Haughton, M.D., who was up to all kinds of tricks, both of speech and act. He had managed to secure for the zoological gardens in Phoenix Park, in which he took the liveliest interest, a pair of those rare and unamiable marsupians, the Tasmanian devils. Not being able to go to Southampton, he went to a telegraph office in Dublin, to request a friend to meet them on board the incoming steamer, and send them on. He handed in his telegram to the young lady officiating—"Meet the two devils for me." The Fenian trouble was in the air. The fair telegraphist looked suspiciously at the learned doctor, and scented danger. "Will you be good enough to tell me the meaning of the telegram?" "I will, if you promise me on your honour not to divulge the secret." "I do." "They're two Fenians, my dear," with an unclerical wink. The damsel had discovered an important state secret, and already felt her pockets heavy with a great reward. False to her word, and full of assured hope, she went to "the castle," after hours, and made known her important secret. The result was that, by order of the Home Office, an imposing posse of police were in waiting for the arrival of the steamer, and, to their intense disgust, were introduced to the deadly little animals, with whom, it is to be hoped, that they had no further acquaintance.

SUSSEX IRONWORK.—In the barbican of Lewes castle an exhibition is being held of ancient implements, ornaments, and utensils made from Sussex iron. The most interesting exhibit is a Roman iron statuette, but many of the weapons were found in the Saxon graves at Saxonbury, near Lewes. Sussex, before fuel grew scarce, was the great centre of the iron

industry, and specimens of Sussex ironwork still remain in London, notably the railings of Christ hospital and St. Paul's churchyard.

WALKER ART GALLERY, LIVERPOOL.—The permanent collection in the Walker gallery has just been enriched by the addition thereto of Mr. John Fulleylove's picture, "The Temple of Jupiter and the Acropolis," and Mr. R. Caton Woodville's picture, "The Charge of the 21st Lancers at Omdurman." In the former instance the donor is Alderman Oakshott, and in the latter Sir Alfred Jones, K.C.M.G.

PITT-RIVERS MUSEUM, OXFORD.—A curious and interesting addition has been made to the Pitt-Rivers museum at Oxford, in the shape of a rare totem "post" from Queen Charlotte's island. It was presented by Professor Tylor, who obtained it through the agency of the Hudson Bay company. The rarity of these totems is due to the increasing influence of the missionaries among the native Indians. The new addition to the museum consists of a cedar-wood trunk, about 40 feet in height. Bears and ravens are prominent among the carvings. There are also two "house posts" from the same island, one of them representing the "killer whale." As this creature is supposed to be inhabited by a devil, the post has heads at each end, while the demon remains in the middle.

WAITING FOR A CATALOGUE.—Twenty years ago died Mr. John Jones—an event which brought to the treasure-house at South Kensington the most valuable bequest it has ever received. In fact, no such gift has ever been presented to the nation, the Wallace collection alone excepted. A hand-book to the contents of the Jones collection was published a year or so after the death of the donor, and a detailed catalogue promised. All that has been done to fulfil that promise is the publication of a threepenny list of contents, of unusually meagre proportions. The public is patient, but surely twenty years is a long time to wait for a properly illustrated, detailed, and technical catalogue.

NATIONAL ART BEQUEST.—The late Miss Emily Frances Dalton left, by her will, a considerable collection of prints and drawings to the Victoria and Albert museum, with the condition that the students of the school of art at Leicester, to which it was on loan at the time of her death, should continue to have opportunities of studying it. The collection has been catalogued and returned for the present to Leicester, where it is now exhibited. Among the drawings are several of considerable importance, notably a fine sketch of a landscape by Rembrandt; two good studies from life by Rubens, for figures in the foreground of the picture "The Miracles of St. Francis

Xavier," now in the Imperial gallery at Vienna: both these came from the collection of Sir Thomas Lawrence. Van Dyck and his school are represented by a landscape, a fine study of the left arm and hand of a cloaked man, and some others; Gerard Terburg by three full-length figures in pencil; and the Dutch landscape school of the seventeenth century by a considerable number of excellent drawings, nearly all from well-known collections of the eighteenth century. Among drawings of the Italian school, the most interesting is a large landscape in faint brown ink, from the collections of Sir Thomas Lawrence and Mr. Esdaile, which is ascribed to Titian with considerable probability of accuracy; and a chalk drawing of a young man in Venetian costume, by Jacopo Bassano, is a valuable addition to the few examples of this master available for study in Great Britain. The prints are chiefly of the Dutch school, but include no specimens of extraordinary interest. The whole bequest amounts to over four hundred items.

NILE FISHES.—Over 9,000 fishes from the Nile have been received at the natural history museum at South Kensington, as the result to date of the survey of the fishes of that river organised jointly by the Egyptian government and the authorities of the museum. Mr. Loat, superintendent of the survey, is now on the Blue Nile at work, and arrangements have been made for him to continue his explorations this season as far south as Gondokoro.

BRITISH MUSEUM.—A very large addition has been made to the collection of birds' eggs and the entomological collections in the British museum by the bequest of the late Mr. Philip Crowley. In accordance with the terms of the will, over 15,000 eggs have been selected by the museum authorities from the Crowley collection. The selection includes a very fine example of the egg of the great auk, believed to be one of the last, if not the very last, specimen of the species brought from Iceland before the colony of great auks became absolutely extinct. There is also a specimen of the very rare egg of the Labrador duck, though some authorities doubt the authenticity of this particular example. The Crowley insects chosen for the British museum collection number over 26,000, nearly all butterflies, many of them of the most beautiful and showy sort. Mr. Crowley was particularly interested in the butterflies of Africa and South America, and frequently paid very high prices for rare or unknown species. This acquisition represents nearly 10,000 species.

MIDDLESBROUGH NEW MUSEUM.—The corporation of Middlesbrough have adopted the plans of the borough surveyor for a new museum, which it is proposed to build

on the south side of the Linthorpe entrance to the Albert park. The museum is to be the gift of Mr. A. J. Dorman, and when completed will contain the South African specimens of Mr. A. E. Pease, M.P. The building will be about 85 feet square, and the main entrance hall, which will face the north, will be about 15 feet square. The height of the building will be about 25 feet, and it will be crowned by a handsome dome. The structure will be beautified by the planting of trees and shrubs, and will when completed be an ornament to the town. The plans were unanimously passed.

HULL MUSEUM.—The publications of the Hull museum follow each other in rapid succession, and display a most catholic range of subject. The last one (No. IV.) deals with one of the chief treasures of the Hull museum, the ancient boat model from Roos Carr. An excellent description is given of this unique curiosity—the model of a Viking boat and crew—and its history is discussed at length. Mr. Sheppard has diligently collected all references made to it in local records, and he also compares the figures of the crew with similar figures found elsewhere, more particularly with the Ballachulish and Brandenburg images. There seems no reason to doubt his conclusion—indicated above—that the model is Scandinavian, and that it dates back to the times of the Danish invasions of our east coast. The pamphlet is pleasantly written, clearly printed, and well got up; it is also illustrated by five figures. No one could fail to admit that the penny charged for it was a very modest demand.

PARKES MUSEUM OF HYGIENE.—Mr. W. H. Knight, who for the past ten years has had charge of this museum, is resigning his office of curator. Those acquainted with this special museum will recognise the excellent services rendered by Mr. Knight, which are shown by the great improvements made during his tenure of office. His close study of the science of hygiene has enabled him to make the museum an orderly and understandable illustration of this important department of public health. It is still his intention to continue to advance the knowledge of hygiene by giving practical demonstrations, delivering lectures, and conducting classes; and it is with the view of obtaining more leisure and freedom for this work that he is severing his official connection with the Sanitary Institute. He will also act in an advisory capacity to further the illustration of sanitary science in museums at home and abroad.

JOHN STORRIE.—In a belated number of the "Public Library Journal" of Cardiff, there is an interesting bio-

graphical sketch of John Storrie, who was for about thirteen years curator of the Cardiff museum, a position he resigned in 1893. Mr. Storrie attended some of the earlier meetings of the museums associations; and though he may not have commended himself to some of the members as a highly cultured curator, yet he was a man of deep and sound knowledge in botany and geology, with a capacity for work in his favourite studies that belongs only to the enthusiast. He passed away in May, 1901, at the age of 57, having been born in Lanarkshire in 1844, another of those Scottish naturalists who, in spite of the absence of the early advantages of education, have yet become distinguished naturalists.

PHOTOGRAPHS.—The Board of Education has issued a classified list of photographs of works of decorative art in the Victoria and Albert museum and other collections, which can be purchased at prices ranging from 6d. for the smallest size ($4\frac{1}{2} \times 3\frac{1}{2}$), to 6s. for the largest (24×24). The catalogue under notice comprises silversmiths' work, jewellery, enamels, crystals, jade, &c.

PRINCE OF WALES' PRESENTS.—A carefully arranged catalogue is being prepared of the presents, curiosities, and photographs brought home by the Prince and Princess of Wales from their tour in the Ophir. When ready the collection will, it is stated, be placed on exhibition in the East as well as the West-end of London, and probably also in some of the principal provincial cities. The list of presents is long and varied, beginning with a Spanish lace mantilla presented to the Princess at Gibraltar, and ending with a belated perambulator which an enterprising Ontario manufacturer designed during the Royal visit to Canada with the trademark name of "The Prince of Wales," and forwarded to England direct.

LEIGHTON HOUSE.—The libraries committee of the Kensington borough council reports that it had considered a letter from the Leighton House executive committee, suggesting that the council might fitly commemorate their inaugural year of office by accepting the gift of this property and permanently maintaining it under its statutory powers as an institution for the encouragement of the study of literature, science and art in the borough. The terms of transfer presented no difficulties in the way of the council accepting the gift. The owners were willing to hand over the lease of this unique building and grounds; and the Leighton House sketch committee proposed also to hand over to the council the very valuable collection of paintings and sketches by Lord Leighton, P.R.A., which have been deposited in the house. As to cost, the amount which would fall upon the rates

would be approximately £500 per annum. The committee, after full consideration, had come to the conclusion that the gift was one which should undoubtedly be accepted by the council.

GEOLOGICAL MUSEUM POTTERY COLLECTION.—An order recently issued by the President of the Board of Education directs the removal from the Geological museum in Jermyn Street of the very fine collection of china and pottery, which has for many years been one of the principal features of this museum. It has been a debateable point whether such a collection was not out of place in a purely geological museum, and it is accordingly being dispersed. A part has been sent to the Bethnal Green museum to be there exhibited, but it is understood that many specimens will be available for the loan collections in the provincial museums, and a selection will shortly be made for that purpose.

ANIMAL FORM IN ART.—The first of a course of four lectures on "Animal Form in Relation to Art" was delivered at the Institute Galleries, Whitworth Park, by Mr. W. E. Hoyle, director of the Manchester museum, Owens College. In his introduction the lecturer pointed out that the æsthetic contemplation of animal life usually precedes the scientific. Man watched the flight of birds with wonder and pleasure before he tried to explain it, and feasted his eyes on their colours long before he analysed the pigments. The representation of animals, he showed, goes back to the earliest times in which we have any traces of art whatever. Among the relics of the Stone Age were bones, horns, and tusks on which the figures of animals had been engraved, often with marvellous skill and life-likeness. Carvings in the round existed, as well as realistic outlines. The art of this period was essentially that of a hunting people, and its objects were almost exclusively animals, notably those which were slain for food. Treating next of the art of the Early Economic period, the lecturer spoke of the development in it of a religious significance. Traces of the worship of animals and of the use of idols were found, and votive animals, as well as those used for food, were now represented. This period was marked by a distinct artistic decline, most of the representations being lumpy and characterless. An interesting feature was the increasing part taken in artistic matters by women, who also helped in the manufacture and decoration of vessels and utensils. Compound animal forms seemed to have originated in Egypt. These might have had their rise in religious celebrations, the priests dressing themselves in the skins of the animals sacred to the divinity whom they were worshipping. Some compound forms—as that of the Sphinx—originated in

poetic ideas. The Third Dynasty was one of Professor Flinders Petrie's high-water marks of Egyptian art, and afforded many beautiful examples of animal form. Later dynasties showed considerable degeneration. One of the most remarkable culminations of art was attained in Greece in the Mycenæan period. Among the most beautiful works in relief from Mycenæ were those in thin sheets of gold and other metals, representing, on small plaques, stags, griffins, octopuses, and various animals; and in 1889 two masterpieces, in the shape of golden cups decorated with bulls, were discovered in a grave at Vaphio. Dealing briefly with the Iron period, the lecturer passed on to the classic age of Greek art, where, he remarked, might be found unequalled examples of the adaptation of form and shape to the outlines and action of different animals. The sculptures of the Parthenon—the masterpieces of Phidias—might be taken as typical of this period, and a large number of figures of different species of animals might also be found on contemporary Greek coins. Mr. Hoyle, who had a large and attentive audience, was warmly applauded at the close of his address.

ABROAD.

AMERICAN ARCHÆOLOGY.—Mr. Harlan I. Smith has sent us reprints of several interesting papers which he has read before various scientific societies, dealing with the results of the archæological investigations which he has so ably conducted in different parts of America in connection with the American museum of natural history.

TRIVANDRUM MUSEUM.—The report for 1899-1900 gives an historical account of the museum and gardens. The museum was first opened in 1857, but the gardens, which were to contain living specimens of plants and animals, though projected at the same time, were hindered by various causes, and have only recently been completed. A new building was erected in 1875 for the museum, so that there is now a well-equipped museum with excellent botanical and zoological gardens surrounding it.

PENNSYLVANIA MUSEUM.—This is a very handsome building, judging from the illustration which forms the frontispiece of the 25th Annual Report, and that it is well managed, as well as largely used, is shown by the contents of the report. During the 12 months ending May 31, 1901, there were 719 accessions to the collections of the museum, by gift, loan, and purchase; and the number of visitors during the year 1900 was 284,925, of which 134,092, or over 47 per cent., came on

Sunday afternoons. There is a view given of a corner in one of the American pottery rooms, the authorities of the museum rightly giving attention to the collection and preservation of American pottery. Other illustrations show some of the objects purchased at the Paris Exhibition, amongst them being a beautiful wrought-iron grille by M. Bergeotte. The museum appears to receive fairly liberal financial support, both from government and private individuals, there being a list of patrons who have each subscribed 5000 dollars and upwards, besides a long list of donors of 100 dollars each.

ANCIENT PILE DWELLINGS.—Some peculiarly interesting discoveries have been made during the excavations which are being carried out near Dolina, in Northern Bosnia. They consist of several well preserved pile dwellings, which date from the bronze and iron ages, and were probably swallowed up by an inundation in the third century before Christ. Three of the houses are so well preserved that it is possible to decide from them several points as to the architectural features of these lake dwellings, which have not hitherto been accurately known. Another interesting discovery has been made at the same spot in the shape of an ancient boat, probably three thousand years old. This has been transferred to the Sarajevo museum.

MORE MOAS.—Another important discovery of moa bones is reported from New Zealand, this time from the neighbourhood of Lake Te Anau, in the far south, overlooking the great fiords. The "find" will be of as great value to the museums in the colony as was that at Glenmark, in the Canterbury province, some years ago. Many thousands of well-preserved skeletons of the curious bird were dug out at Glenmark, and with these the museum authorities were enabled to effect exchanges with kindred institutions all over the world. If the moa was not gregarious in his habits, he had the useful knack of dying in flocks, as appears from the discoveries so far made of his remains. It is calculated that many thousands of skeletons will be procured from this cave by the shore of Lake Te Anau, and the discovery is, therefore, regarded as one of considerable value.

LUXEMBOURG MUSEUM.—This museum continues in high favour with artists, who send to it their best works. Among recent additions to the fine collection are a bust of Tolstoy by Prince Trobetskoi, a model of Bartholdi's "Lion of Belfort," a charming "Narcissus" by Charpentier, a beautiful water colour by Jongkind, a delightful study by Henner, and M. Galle has contributed a "horn in cut crystal," while M. Michel Cazin, a son of the great landscape painter, has sent a lovely vase.

ARMY MUSEUM, PARIS.—An interesting gift has been added to the Musée de l'Armée, Paris. In five great cases are placed nineteen thousand figures of soldiers about two inches high, all branches of the army being represented with the utmost exactitude regarding uniform and arms. The toy army, marching past Napoleon, has for setting a village with the populace in the streets cheering the soldiers. This picturesque work occupied the lifetime of an old Alsatian who fought under the "Little Corporal."

SHAKING HANDS WITH A MUMMY.—An article in the current number of the "Traveller" deals exhaustively with the sights of Cairo, and the writer states that a quondam acquaintance of his once had the unique experience of actually "shaking hands" with Rameses II. in the museum of Egyptian Antiquities. "Happening to be present on one of those rare occasions when his glass case was being removed for dusting," he relates, "and while the attendants' backs were turned, I quickly stooped and touched the mummy's hand, whispering at the same time: 'Hello! Rameses, old chap, how are you?' Thus I can say that I have shaken the hand (though you may be sure I did it gingerly) of a King who lived some 4,000 years ago."

ART AT THE ANTIPODES.—The following letter recently appeared in the *Morning Post*:—I have just read in the *Sydney Morning Herald* an article, reprinted from the *Morning Post*, by Mr. J. Stanley Little, on the necessity for the reformation of the Royal Academy, and feel that a few words on the far-reaching effects of the present stereotyped taste of that body will be of interest. Mr. George Moore, in a paper entitled "The Alderman in Art," some years ago expressed his horror at finding that our great provincial towns were gradually being enveloped in the meshes of the Royal Academy, and were striving to outshine each other in the formation of picture galleries on the lines of the Chantrey Bequest collection. Unfortunately the evil is not confined to our own shores, but has extended in its most virulent form to all parts of the Empire, where communities, having arrived at affluence, say to themselves: "We must be refined; we must have a picture gallery." The method generally followed in forming this evidence of refinement, I am told, has been to write to the president or some member of the Academy, naming the amount of money available, and asking for as many good pictures as the sum would procure. After all, one cannot criticise this way of forming a collection, as theoretically it is perfect. People requiring pictures, and not being in a position to choose for themselves, apply to gentlemen who by

royal charter are stamped connoisseurs to choose for them. Naturally, to the bulk of the community the president and members of the Royal Academy must of necessity know more of art than other people, and, therefore, who are better qualified to buy pictures? However it may be, the result is deplorable, and the fact remains that the cities of Melbourne and Sydney have spent thousands of pounds for collections which would not fetch as many hundreds under the hammer—to put the case in a way that appeals to the public. Melbourne and Sydney have carried the feeling which prompts the remark, “Your streets are not so wide as ours,” and the answer, “Ah! but you haven’t got such a splendid harbour,” into their efforts at the picture galleries, and if one be lucky enough to secure a portrait of Moses, the other will follow suit with one of Aaron. Of the two the collection at Sydney is the better—or it may be that I passed more time in the Melbourne Gallery. Really one does not know what to think. Did these Royal Academicians, when sending out the pictures from England, believe they were sending out fine works, or was it that they hoped to please the Australian public? If they were under the impression that they were procuring fine works, they have proved themselves incompetent. If they only thought of pleasing the Australian public, they did them a great injustice, as there is not the least doubt that had they sent good pictures the people of the New World would have been equally well pleased, as they were evidently prepared to accept the standard fixed by the artists to whom they applied. Indeed, they have done so, and are apparently happy in the possession of some of the worst pictures I have ever seen hung in an important gallery. It is a difficult matter to efface early impressions. Lately, when Mr. G. Clausen, who, in common with several other associates and members, is a distinguished painter in spite of the letters which follow his name, sent out a small collection of paintings he had chosen at the request of the trustees of the West Australian Art Gallery, and included a few of the newer school, I am told they did not “give satisfaction.” No doubt these authorities had preconceived ideas founded on the collections of the other Colonies. Of course, one is conscious that the majority of people in England are quite pleased with the Chantrey Bequest School, but the pity of it is that this preference should be thrust on a young nation whose artistic education might so easily have been started on good lines. The responsibility for this sad state of affairs rests with the royal charter which enables forty men to fix the seal to the æsthetic taste of the Empire. I sincerely trust that some of the reforms suggested by Mr. Little may be carried through

before the time comes for the formation of picture galleries at Pretoria, Johannesburg, and Bloemfontein.—Yours, &c., RONALD GRAY (Chelsea Arts Club), Bora Creek, viâ Inverell, New South Wales, October 19.

ADDITIONS TO THE LOUVRE.—Some valuable gifts have been made to the Louvre. The most important consist of tapestry in excellent preservation. One superb piece, presented by M. Cosati, is of eighteenth century manufacture, and represents Hector armed for the fight bidding farewell to Andromache. Two other works of art, of the sixteenth century, have been bequeathed to the museum by M. Rochard, a distinguished art amateur, who has divided his valuable collection between the museums of the Louvre, of Cluny, and lo Decorative Art.

FRENCH IRONWORK.—France has just lost another of its art treasures in the shape of a beautiful ironwork grille, originally belonging to the abbey of Clairvaux. In 1800 the authorities of the cathedral of Troyes purchased this remarkable piece of railing and placed it round the choir of the church, where it remained until 1850, when it was relegated to obscurity because someone thought it was not in keeping with the character of the edifice. Recently the vestry board, requiring money, brought the treasure from its fifty years' hiding and sold it by auction for 14,000fr. to a wealthy American.

NEW ITALIAN MUSEUM.—The Italian Government will probably purchase the Borghesi villa, with its casino, museum of statuary, and gallery of pictures. The Bill for the purpose has already been passed by the select committee of the House. The intention is to use it as a public museum for the magnificent art collections belonging to the State. The Ludiviso museum of statuary, lately purchased by the Government, and now exhibited to but poor advantage in the small rooms at the museo nazionale in the baths of Diocletian, will be at once moved to the villa.

CURIOUS FORETHOUGHT.—One of the professors of Prague University, Dr. Von Jurisch, who died a few days ago, leaves nearly £3,000 to the National museum, conditionally upon his clothing, plate, linen, library, manuscripts, and letters being packed in airtight cases and left hermetically sealed for two centuries. At the lapse of that period the cases are to be opened and the contents exhibited, so that the people then living shall judge what were the manners and habits of a professor of our generation. It is a curious will, and another illustration of the fact that a learned man may be an oddity. We are not sure that after two hundred years there will be as much interest felt in Mr. Von Jurisch's sartorial and domestic

arrangements as he seemed to anticipate, or indeed that people will need any enlightenment on the subject. We have still with us coins, plate, and manuscripts of two centuries back, and the style of dress has been transmitted in books and drawings. It is improbable that our descendents will be more indifferent to the preservation of our peculiarities. But perhaps the absurdity of the bequest will be fatal to it in the courts.

SÈVRES MUSEUM.—The Ceramic museum at Sèvres has received some important additions in the form of five cases containing some superb specimens of the remarkable periods of Louis XV., Louis XVI., the Empire, and the Restoration. There will also be on view various unique works belonging to the Second Empire—some of them veritable poems in pottery—and to the third Republic. The exhibition affords a complete insight into the history of French ceramic art covering over a century and a half.

A DISCOVERED TITIAN.—The officials of the art museum of Princeton University believe that the museum possesses a genuine Titian. The picture was bought in Rome several years ago by an American, and the University purchased it from his widow. Experts say it is a replica of the Magdalene in the Hermitage Gallery.

EXCHANGE AND SALE COLUMN.

Advertisements for museum specimens, books, fittings, or appliances can be inserted in this column. Sixpence for the first ten words, and threepence for every ten words afterwards.

FRANK SUTER & Co., Ltd.,

. . Electrical Engineers, . .

Designers and Manufacturers of Electric
Light Fittings.

SPECIALITY :

Picture and Museum Case Lighting . .

. . By Suter's Registered Reflectors.

FRANK SUTER & CO., Ltd.,

66, BERNERS STREET,

. . LONDON, W.

Marine Biological Association of the United Kingdom.

Specimens of MARINE ANIMALS and PLANTS specially preserved for Museum purposes. For detailed Lists and Prices apply to

THE DIRECTOR, BIOLOGICAL LABORATORY, PLYMOUTH.

NS, Ltd., ESTAB.
1846.
LONDON, E.C.

Museums or Private Collections.
Sundries to the British Museum, &c.
of any description made to order.

(Patented). 3/6 per gross.

It has a sharp needle point,
in any position in trays or
stands, &c. Altogether one of
the most useful and very cheap.



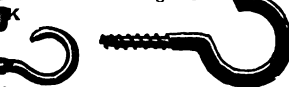
No 3.—12/- per gross.
for holding specimens from edges of glass
or wood shelves.

Hooks for Cases, &c.

guaranteed truly tapped, bronzed
(non-corrosive).

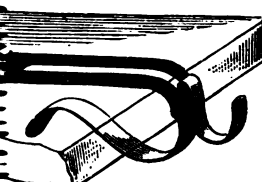
Medium

Large K



per gross.

10/- gross.



STEEL SHELF HOOK.

Specimens from $\frac{1}{4}$ or $\frac{3}{8}$ inch shelf.

9/- per Gross.

Each shelf at same price.

THE IMPROVED "REVERSIBLE"
"REVERSED"



No 1008. Price, 8/- per gross.

descriptive labels. Having two spikes
which are rigid when once pressed into

Card will be sent Free on application.

**THE
ADERSGATE
STAND**



Adersgate Stand (Patented)

holding descriptive cards at any angle.

in, by $\frac{1}{2}$ in. .. 10/- per gross.

in, by $\frac{3}{4}$ in. .. 24/- "

Ltd., ESTAB.
1846.
LONDON, E.C.

Supplies to the British Museum,
Museum, Horniman Museum,
and others.
Illustrations, and Samples, on

No. BT3.

"Simplex" Shelf Clip.

For holding specimens from $\frac{1}{4}$ or $\frac{1}{8}$ in.
Specially useful for long narrow
labels.

per doz.; 15/- per Gross.



Glass-Topped Specimen Boxes.

White paper inside and black out-
side. As used at the Geological Museum,

Width	Depth.	
by $\frac{1}{8}$ in.	..	18/- per gross.
by $\frac{1}{4}$ in.	..	21/- "
by $\frac{3}{8}$ in.	..	24/- "
by $\frac{1}{2}$ in.	..	27/- "
by $\frac{3}{4}$ in.	..	31/- "
by 1 in.	..	36/- "
by $\frac{1}{2}$ in.	..	27/- "
by 1 in.	..	27/- "
by 1 in.	..	27/- "

Any other size,
prices are quoted.

Take in the following sizes covered

by 1 in.	..	24/- per doz.
by 1 in.	..	30/- "
by 1 in.	..	36/- "
by 1 in.	..	42/- "
by 1 in.	..	48/- "
by 1 in.	..	60/- "
by 1 in.	..	72/- "

CARDBOARD TRAY
WITHOUT LID.

Net Cardboard Tray for
Specimens.

width, and finish as boxes No. 14,
but are $\frac{1}{8}$ in. high.

2	3	4	5	6
7/-	6/-	7/6	9/-	10/6 per gross

Larger sizes to order

Board for Mounting or Writing

24 by 19, 6-sheet cardboard,	2/3
24 by 19, 8-sheet cardboard,	2/6
24 by 19, 12-sheet cardboard,	3/-
24 by 19, stout tinted board,	3/6
Ivory card, 24 by 19, thick,	4/6
Ivory card, 24 by 19, medium,	4/-
Ivory card, 24 by 19, thin,	3/6

above sizes at half the prices.

SONS, Ltd., ESTAB.
1846.
LONDON, E.C.
Exhibition or Private Collections.
SCISSORS & BRACKETS,
SCISSORS.



Bracket J.

Standard Bars.
Quality and Finish.

Bars are stocked :-

BRONZED.

10	12 inch.
2/3	2/6 each.
21	24 inch.
6/6	3/6 each.

IRON (Warranted).

10	12 inch.
1/6	1/6 each.
21	24 inch.
4/6	5/6 each.

L TAPPED BAR; Brass, Bronzed, 1/- per foot.

CASES.

earnestly solicited to
sell for many purposes,
compulsory. We quote
FULL VALUE. Packing
in addition, carriage paid,



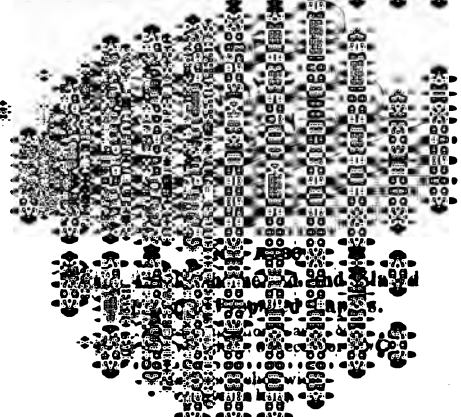
not less than 4 feet.

Drop Doors

AND VALUE, gin. high

Removable Trays.

35/-	per foot.
30/-	"
25/-	"
22/6	"



114. Useful Cabinet for private

Reflectors or Duplicate Specimens.

Light wood covered cloth, brass handles.

15 by 12 by 8 (4 drawers)	16/6
18 by 15 by 20 (5 drawers)	21/-
20 by 18 by 12 (6 drawers)	25/-
34 by 20 by 16 (8 drawers)	30/-

Ltd., ESTD. 1846.

LONDON, E.C.

for Private Collections.

DIMENSIONS.

Total height, 6ft. 3in. (excluding ornamental iron cresting and finials).

Table Height, 2ft. 9in. depth, 4ft. 6in.

Total height of Show Case (excluding cresting), 3ft. 6in.

Height of upper part of Show Case, 2ft. 13in.

Depth of upper part of Show Cases, 14 in.

The lower portion of Show Case measures at its highest 15in. and at its lowest 9in.

Bottom of Case is covered with Claret or Blue coloured Cloth. The under part of table is fitted with Drawers, three in height and length, according to dimensions of Case. All Sashes are made on the "air-tight" principle and Glazed Plate Glass.

7ft. by 4ft. 6in. by 6ft. 3in., 18 Drawers, **£66 10/-**

9ft. by 4ft. 6in. by 6ft. 24 Drawers, **£78 10/-**

12ft. by 4ft. 6in. by 6ft. 30 Drawers, **£95**

If delivered outside London, an extra charge is made for packing, according to size, varying from £3 upwards.



any Plate-Glass Case.

all round and top, carved pedestal with one full-sized plate-glass door and brackets. Splendid work.

B Quality, without pediment or iron fittings.

24	£15 5 0	29 17 6
30	18 10 0	12 15 0
36	21 15 0	15 10 0
42	25 0 0	18 10 0

above, 37/6, 57/6 & 72/6 extra, made for all purposes—any size and drawings supplied on application.

BOTANICAL SPECIMENS

FOR MUSEUMS.

CONES OF RARE CONIFERS.
INFLORESCENCES OF CYCADS,
CYCAS, ZAMIA, MACROZAMIA,
CERATUZAMIA, STANGERIA, ENCEPHALARTOS, &c.,
MALE AND FEMALE.

SECTIONS OF BRITISH AND OTHER TIMBERS.
SPECIMENS FROM THE TROPICS.
SPECIMENS IN ALCOHOL and other media.

Models of British Fungi.

ECOLOGICAL SPECIMENS.

ANATOMICAL SPECIMENS.

HERBARIUM SPECIMENS.

Insectivorous and Parasitic Plants.
SETS ILLUSTRATING ECONOMIC PRODUCTS.
PATHOLOGICAL SPECIMENS.
FOR PARTICULARS SEND FOR SPECIAL PRICE LIST.

J. BACKHOUSE & SON, LIMITED,
THE NURSERIES (Scientific Department,)

Telegrams: "BACKHOUSE, YORK
'Scientific.'"

YORK.

W. D. WEBSTER,

Home Court, 24, Palace Road, Streatham Hill,

. . LONDON. . .

COLLECTOR OF ETHNOGRAPHICAL SPECIMENS,

EUROPEAN AND EASTERN ARMS AND ARMOUR,

PREHISTORIC AND OTHER ANTIQUITIES.

Telegraphic Address: "ETHNICALLY, LONDON."

ILLUSTRATED CATALOGUE published every three months. Each copy contains 20 plates reproduced from photographs, and is subscribed to by all the principal Museums in the world. Subscription 10/- per year, post free, payable in advance.

A few bound Catalogues can still be obtained at the following prices:—

Vol. 1 contains Catalogues Nos. 1 to 10 - - 30/-

Vol. 2 ditto Nos. 11 to 17 - - 20/-

Vol. 3 ditto Nos. 18 to 23 - - 25/-

Vol. 4 ditto Nos. 24 to 27 - - 25/-

The Collection consists of over 10,000 specimens from all parts of the world, any of which will be sent on approval on carriage being paid.

SPECIMENS BOUGHT OR EXCHANGED.

C. GUNDLACH & MÜLLER,

OTTENSEN, Near HAMBURG, GERMANY.

Manufacturers of all kinds of GLASS JARS for Museum purposes especially.

SQUARE JARS with Ground Glass Covers and Polished Face.

CYLINDRICAL JARS with Stoppers or Corks, etc., etc.

ALL ORDERS WILL BE PROMPTLY EXECUTED.

FIRST-RATE REFERENCES ON APPLICATION.

C. GUNDLACH & MÜLLER.

Photographs of

Familiar Trees

Plants & Flowers

in their SUMMER and WINTER appearance, with enlarged views of their bark, leaves, flowers and fruit, showing details of structure and growth.

MAY BE SEEN at the British Museum ; Royal Art Library, South Kensington ; University College, London ; University College, Liverpool ; Museum of Science and Art, Edinburgh ; &c., &c. Lists on application.

HENRY IRVING, The Rowans, HORLEY, SURREY.

MUSEUMS ASSOCIATION.

President :

Sir WILLIAM TURNER, K.C.B., B.SC., F.R.S., D.C.L., L.L.D.

Treasurer :

Alderman W. H. BRITTAIN, J.P., F.R.G.S. (Sheffield).

Hon. General Secretary :

E. HOWARTH, Museum, Sheffield.

The object of the Association shall be the promotion of better and more systematic working of Museums throughout the Kingdom. In order to promote a better knowledge of Museums, the Association shall meet in a different town each succeeding year.

That each Museum contributing not less than one guinea a year be a Member of the Association, and that individuals interested in scientific work be admitted as Associates on payment of 10s. 6d. annually.

That each Museum be represented by three delegates, each having one vote. Each Associate to have one vote.

That each Museum belonging to the Association and each Associate receive one copy of the publications of the Association.

That a General Meeting of the Association be held annually, for the transaction of business, the reading of papers, and the discussion of matters relating to Museums.

MUSEUMS ASSOCIATION.

Some of the earlier volumes of the Report are nearly out of print, and Museums requiring complete sets should order them at once. Particulars can be obtained from the Secretary, Museum, Sheffield.

Museum Statistics.

IT is often difficult to understand how museum statistics are ascertained, for at many museums and art galleries there are no automatic means of registering the number of visitors who enter, yet these institutions publish the annual number of visitors in their reports. Even at the British (Natural History) Museum there are no turnstiles, yet each year the number of visitors is given in the annual report. Surely it is desirable in every case to say how the numbers are arrived at. The Manchester museum, Owens College, is another case where no turnstiles are used, though probably there they attach more importance to the use made of the museum than to the number of people who enter it. A curious instance of how to make museum statistics was furnished by Derby in its annual return to the Science and Art Department, where it figured with about the largest number of visitors of any museum obtaining loans from that department—a number that was equal to about five times the population. They have no turnstiles at Derby, so were able to make free use of the multiplication table. But a more interesting example still has been furnished this year by a midland town, where turnstiles are used. The museum and art gallery of this town are situated on a hill which commands an extensive view of the whole district, the building being also surrounded by attractive pleasure grounds, in which bands of music frequently perform. The turnstiles are placed at the entrance to the pleasure grounds, so that they register everyone who passes into these, whether they enter the museum or not, though the turnstile register is taken as a correct record of the people who go to the museum. How utterly they falsify the statistics was shewn this year, when there was a fire at a large lace factory in the town, the best place to see the fire being from the hill on which the museum and art gallery stand. Thousands of people passed

through the turnstiles on that occasion to witness the conflagration, not one of them entering the building, though they were all duly recorded as having done so. Obviously it is absurd to take the record of visitors to a museum from the entrance to pleasure grounds, and no reliance whatever can be placed on the statistics of attendance published in connection with that particular museum and art gallery.

There is no doubt that considerable importance is attached to the number of visitors to a museum in those towns where it is under municipal control; and as this is often taken as the measure of success, it is important that the record should be a correct one. Where turnstiles are properly placed, there is no doubt that they furnish the best means of obtaining reliable statistics. Counting is absolutely valueless, the figures being almost invariably too low; and there is little doubt that the statistics of the British (Natural History) Museum do not represent the number of visitors that enter that institution. It may be that there they are indifferent to mere numbers, and, perhaps, properly so; yet it is not unusual to find other towns comparing their statistics with the metropolitan institution, to shew how nearly they approach it in popular appreciation. As other national institutions, such as the National Gallery, the Tate Gallery, and the Victoria and Albert Museum, have all registering turnstiles, it is difficult to understand why they should be absent from the British (Natural History) Museum; one result, at any rate, being that there they shew a much smaller attendance than at the art institutions, though probably that is not absolutely accordant with facts. At any rate it is desirable, in publishing museum statistics, to say how they are obtained; and there certainly can be no excuse for placing turnstiles in such a position that they must of necessity mislead, sometimes to an enormous extent, when there happens to be a great fire in the town.

On the Arrangement of Geological Collections.

By J. G. GOODCHILD, F.G.S., F.Z.S., of the Geological Survey of Scotland, Edinburgh Museum of Science and Art.

[Paper read at the Edinburgh Conference, 1901.]

FROM a curator's point of view, geological collections present a considerable amount of difficulty, because hardly any two geological visitors to a museum require exactly the same kind of information. This, of course, arises from the comprehensive nature of the science. A study which relates to the biology and physical geography of all parts of the world, from the close of what may be termed its astronomical period down to the present day, must necessarily deal with too wide a range of subjects to be adequately treated in any museum. Moreover, its claims upon the popular attention cannot be ranked with those of zoology, botany, or most other branches of natural science; because geology requires a much wider range of knowledge, and a more comprehensive grasp of first principles, than any one of these does, and, therefore, only a few persons are willing to turn their attention to it.

The consequence of this mental laziness on the part of the general public is that geological collections usually do not receive a fair share of the space available in most public museums; and the curator, therefore, finds himself hampered at almost every turn when he takes the geological part of the collections in hand.

In such a museum as that of Science and Art in Edinburgh the case is very different. Thanks to the large-mindedness of the directors, there is now ample space in a well-lighted gallery, and every facility for carrying on the work, and the collections, therefore, are probably without a rival in any part of the world.

An outline of the principles adopted in arranging these collections may, therefore, serve a useful purpose, even though other curators, who are less fortunate in regard to the room allotted, may not be able to carry out more than a small part of the plan.

The leading idea in planning the arrangement was to exhibit the collections made in illustration of the work of the Geological Survey of Scotland. That is to say, the collection had to be limited almost entirely to illustrations of the geology and palaeontology of Scotland. There exists a general collection of fossils, arranged on a biological basis, in the natural history department of the museum, which it was desirable that the Survey collection should not overlap more than was necessary; therefore, the basis of classification adopted was made primarily a stratigraphical one. So far the plan has worked very well. The details hardly need description here, but the general plan of arrangement is as follows:—The fossils from the different formations represented in Scotland follow each other primarily in stratigraphical order, and secondarily in accordance with their biological relationships. All the figured specimens (of which there are large numbers) have copies of the figures attached to them, accompanied by proper references to the papers in which they are described. The collection of fossils is being made the subject of a special hand-book, which is expected to appear this summer.

Most of the remainder of the collection consists of rock-specimens. As these were collected specially to illustrate the maps of the Geological Survey of Scotland, there was but little room for choice in regard to the plan to be adopted in displaying the specimens. The plan decided upon by the Survey is, doubtless, the very best that could have been devised. The rock-specimens are nearly all dressed to the standard size usually adopted, and are mostly taken from the parts of the rock the least altered by exposure to the weather. They are displayed in rows within upright cases, on shelves about one foot apart, each shelf having a ledge in front to prevent the specimens from slipping forward. They are all primarily grouped, as far as possible, by districts which have certain geological or geographical features in common, *e.g.*, The Lothians, Galloway, Perth, Forfar and Kincardine, Fife, Kinross and Clackmannan, Sutherland and Ross, Caithness Orkney and Shetland, Argyll and Inverness, &c. In arranging the collection each district has been made to exemplify some definite group of rocks. For example, Sutherland and Ross is

devoted chiefly to the archæan, toridonian, and cambrian rocks, with their numerous modifications; Perth includes all the various modifications of the rocks of the highland metamorphic series; the Lothians serve to illustrate the Scottish lower carboniferous rocks; Galloway shows the great granite masses and their modifications, together with the very interesting effects of the thermo-metamorphism of the silurian and ordovician sediments around the granite; and so with the others.

As the chief object of the collection is that of illustrating the geological maps, a set of these is exhibited as close as possible to the rock-specimens to which they relate. The maps are exhibited in table-cases in front of the rock-specimens, and are so arranged that each map is sloped forward and is elevated to within an inch and a quarter of the under side of the glass lid, so that details may be readily and easily examined by visitors. Each map is legibly numbered, and is ruled into sixteen equal areas by longitudinal and transverse lines; and the county boundaries are defined by a thin line drawn in charcoal.

Some mode of reference from the maps to the rock-specimens, or *vice versâ*, is needed; so that visitors looking at the rocks may know where they occur on the maps, or, looking at the colour on the maps, may know where to look for specimens of the type of rock denoted by any particular colour. To this end each rock-specimen bears in front a number, placed in the bottom left-hand corner; and, in front of the specimen is a ticket stating the locality, as far as it can be described in the space available. The same ticket has printed on it a small key map or representation of one of the ordnance maps, divided up into sixteen rectangular areas like the maps themselves. This map is numbered in accordance with the particular sheet in which the rock-specimen in question occurs; and, in order to indicate approximately where the corresponding square is to be found in the geological map, one of these subdivisions is coloured vermilion. Within that red square is a black dot, pointing out in what part of the area the precise locality is to be found. The visitor, therefore, looking from the small key map to the geological map before him, finds the general whereabouts of the locality he is seeking, at once. To indicate

this more precisely slender pins are inserted in the geological maps in the table-case, each pin bearing a small number corresponding to that of the rock-specimen it is desired to locate. This plan, which has been in use in the Geological Survey gallery for more than 12 years, has been found to answer the purpose admirably. A visitor who may wish, say, to know what a certain colour on the map denotes, has simply to look out some part where a numbered pin is placed. Then, looking in the cases, he sees the specimen at once. Or, if he is looking at a particular type of rock, and wishes to know whereabouts on the map he can find it, a glance at the key map directs him to near the place, and a reference to the numbered pin upon the map shews him at once the exact spot. Persons interested in the economic side of geology find that the plan here employed saves them a great deal of time. It has answered so well that it can confidently be recommended for application elsewhere. I intend to apply it to the maps, also for the purpose of indicating the localities whence fossils have been obtained. The only modification needed in this case will be to make use of numbers of some distinctive colour, so as to prevent confusion.

As regards the naming of the rock-specimens, it has been found needful to adopt some system which permits of a certain amount of what we may term elasticity. Lithology has so much to recommend itself as a study to those who have only limited opportunities of doing much work in the field, that it has of late become the most fashionable of all the branches of geological study. A most unfortunate result arises from this, and that is that every worker seems to set before himself, as the chief object of his work, either to invent some new name for a well-known type of rock, or to give currency to some uncouth name put forward by some other worker. The result seems to be that many of the present generation of geological workers have lost the power of taking a broad view of facts, and are descending to the level of mere species makers. Some of this is, perhaps, unavoidable. But the immediate result, so far as a curator is concerned, is that he has no sooner put up a name for a rock than some one writes a paper about it, giving it a different name. I must confess that I am inclined to

go the other way, and to *generalise* as much as possible in this matter of nomenclature. But in order to meet the case, and to be prepared for really useful and necessary changes of nomenclature, I have always kept all the labels relating to the names of the different lithological varieties or sub-species loose, and apart from the other information regarding the localities. The names of the rocks are printed on separate tickets, which are slipped in between the locality ticket and the shelf against whose edge it is fastened. This permits of a change of name (when it is really advisable to make the change) being effected in a few seconds. I can recommend the plan for adoption elsewhere.

Besides the tickets just described, there are small printed labels, setting forth the general history of each sub-section of the rocks; and these are fastened to the under side of the front edge of the shelf above which the specimens referred to are placed. Finally, the name of the geological formation, printed in large red letters, is placed at the back of the case.

The type used in all cases is what printers call "grotesque." This is much clearer for a given sized letter than any other.

INDEX COLLECTIONS.

(1) LITHOLOGICAL SERIES.

In a large collection like that here specially referred to, which numbers some twelve thousand specimens, it is not possible to give full explanations of the meaning of the various terms employed. These explanations are quite indispensable if the collections are to be of much real use. An index collection is therefore needed. I have accordingly got together during the last twelve years an extensive series of rock specimens which are intended to serve the purpose required.

For the object in view it is obviously a matter of quite secondary importance where these specimens come from. If a rock from Peru or from New Zealand answers the purpose of illustrating some special feature better than one from Scotland, what does it matter that it comes from abroad?

I have fitted up two large cases containing a more extensive suite of such specimens than has yet been got together for

that purpose anywhere else. The result, so far as the public are concerned, has amply justified the experiment. There is no need to go into details regarding the collection. It must suffice here to state that it numbers between two and three thousand specimens, each of which has been carefully chosen because it enables a student to understand some point of interest or importance in geology. Each specimen has a full descriptive ticket, giving as much information as will more than serve the purpose in view. These index collections have been extensively used by students of all grades, and have formed one of the most popular features in connection with the gallery.

Quite recently the present director of the museum—ever alive to increase the educational value of the collection under his charge—has devised a museum microscope for illustrating lithology. The microscope is left, unguarded, for the use of visitors, and has proved to be a valuable auxiliary to the collection.

There are some ground-glass window panes in one part of the gallery. These have been utilised by placing in front of them a series of photo-micrographs of rock-sections, which continue to serve a useful purpose.

Finally, so far as petrography is concerned, there are two other points to which attention may be directed:—It is sometimes a matter of interest to know what a given rock looks like when it occurs in the field, quite unmodified by other than the agents of nature. To meet this requirement a selection of natural specimens of each of the various types of rock is exhibited, with the natural stains, results of weathering, crusts of lichens or moss, just as they would be seen in their natural state. These have interested not a few of the visitors. The other point is the important one of providing a set of the commoner rocks and minerals which students may at any time handle without let or hindrance. This has been done, and the trust reposed in the average visitor's good sense has very rarely been abused. The matter gives a curator but little trouble, and is of great benefit to the student. Doubtless it might be much more generally adopted than it has been hitherto.

(2) STRATIGRAPHICAL SERIES OF FOSSILS.

To me geology is mainly of interest as a science which is chiefly concerned with the life of the past—all else is subordinate to this. By choice I should be a palaeontologist. Under these circumstances I cannot forbear from trying to interest others in fossils, or from helping them with their work in that department of geology. One of the sections of the index collection, therefore, is that devoted to an index collection of fossils. The leading idea is to place before the student a series of examples of each of the *commoner* fossils of each geological formation, and to add to these, examples (whether common or not) of the species usually figured in text-books. The series is further extended so as to include as many zonal types as possible, each numbered to indicate its relative place in the geological succession. In the collection here referred to this plan has been carried into effect as fully as possible, and there are very few fossils which come under one or the other of the above categories which are not represented by actual specimens in the collection.

I may remark that it has been my practice to allow such students as are really interested, to have the tablets bearing the fossils out for closer examination, subject, of course, to certain necessary restrictions. I can only express my regret that circumstances did not permit of this very useful part of the index collection being extended.

British Museum Appointments.

[N *The Museums Journal* for January, reference was made to the comments which had appeared in the London press respecting the changes which have recently taken place in the staff of the entomological section of the British (Nat. Hist.) Museum. As newspaper statements on such matters are not likely to deal very seriously with the true aspects of the case, it was then pointed out that the motives assigned for the changes might have been somewhat obscured, and that it was scarcely creditable that a great government department should be influenced in the manner that had been indicated. It would be very interesting to have a correct official statement of what has actually occurred in the re-arrangement of the staff, for it appears to an outsider that there has been a distinct departure from the system generally observed in making appointments in the museum, a departure which seems to be fraught with a certain amount of injustice, so far as one can judge from the information available. The bare facts of the case seem to be that Dr. A. G. Butler, who had been for many years in charge of the entomological section has been retired before the age limit has been reached, and against his own inclination. He will, of course, receive the usual pension from government, which rather disposes of the charge that had been made against them of having acted from motives of economy, for if that had been the case, they would have retained Dr. Butler's services, so as to receive full value for the money paid. To understand the changes which have followed upon Dr. Butler's compulsory retirement, it will be useful to glance at the system which has generally governed these appointments.

Before becoming a member of the scientific staff of the British museum, each candidate has to pass the civil service examination, which is a tolerably stiff one, and having successfully gone through this, he is eligible for one of the appointments.

According to the published statements, the staff is graded as follows :—Assistants, second class, £150 to £300 ; assistants, first class, £300 to £500 ; assistant keepers, £520 to £650 ; keepers, £700 to £800. The museum is divided into four departments, viz., zoology, geology, mineralogy, and botany,

each of which has a keeper and assistants of the different classes. Dr. Arthur G. Butler was one of the assistant keepers in the zoological department, being at the head of the entomological section, in which section he had worked for about thirty years, having passed through all the grades up to the position he held at the time of his forced retirement. It is only necessary to give a moment's thought to the fact that insects comprise more species than all other divisions of the animal kingdom, to realize what an enormous amount of work is involved in properly classifying, setting-out, registering, and arranging these collections, before anything can be done in the way of publishing catalogues, &c. This work, it is admitted, has been admirably performed by Dr. Butler, leaving his successor free to benefit by the results of his labours, so as to be able quickly to bring himself into prominence by publishing what is after all the result of his predecessor's efforts. Next in seniority to Dr. Butler was Mr. Charles O. Waterhouse, an old official of the department, who has shewn his thorough competency in his work, so that there seems no special reason why he should not have received the promotion that was apparently so well deserved. The question of economy could hardly enter into consideration, for, as will be seen by the salaries pertaining to the different classes of assistants and keepers, Mr. Waterhouse had already reached the highest limit in the first class, which is only £20 below the commencing salary of an assistant keeper.

As previously stated, the usual entry on to the scientific staff of the British museum is through the civil service examination, but there is an exception to this rule, and it is the operation of this exception that has caused some confusion in the matter.

In order to enable the trustees to select men of special ability in any particular branch of knowledge, they have authority in these cases to forego the usual civil service examination, and appoint a man direct to be second or first assistant, it being understood that he must serve five years in the museum before he can be appointed assistant keeper. Obviously, power of this sort ought to be used with the most careful discretion, for it opens the door to very direct favouritism.

It seems that Sir George Hampson entered the service of the trustees by this method of special appointment a little more than five years ago, and it may be that at that time he had those distinguished qualifications that justified the trustees in appointing him without the preliminary test of examination. Since his appointment he has produced three volumes of catalogues of moths, work which does not usually come so quickly from a junior assistant, whose early years of service have often to be devoted to the more hum-drum work of registering, mounting, displaying, &c. Fortunately this had been already done in the entomological section to a sufficient extent to allow the catalogues to be published. At the end of the five years' service by Sir George Hampson, and practically as soon as he was eligible for the position of assistant-keeper, Dr. Butler who held that position is compulsorily retired. Mr. C. O. Waterhouse, the next in seniority is passed over, and Sir George Hampson, with the good fortune that has waited upon him throughout his museum career is appointed acting assistant-keeper of the zoological department, in charge of the entomological section, in place of Dr. A. G. Butler, who is retired. Such appear to be the facts of the matter so far as they can be ascertained unofficially. Without in the slightest degree questioning Sir George Hampson's entire fitness for the position he has been placed in, there is certainly an element of grave misgiving as to the strict justice of the trustees in retiring an efficient servant before his time was up; passing over an old servant who by work and seniority appears to have been entitled to the position thus vacated; then giving it to a man who had come into the museum by special appointment without having to go through the examination which the other members of the staff had to submit to on their entry, and who was put into this new position almost at the earliest possible moment that the rules of the service made him eligible, and who is still only 42 years of age, thus being put into a position superior to much older men who have behind them the record of many years of good service. It will be noticed that Sir George Hampson is appointed *acting* assistant keeper, so that there is time to re-consider the position before it becomes permanent.

E. H.

Hygiene as a Subject for Museum Illustration.

[CONTINUED FROM PAGE 171.]

III.

Division B. Water.

THE division dealt with here is of such an important character that ample and careful attention must be devoted to it. The subject, water, is a life necessity and at the same time a death dealing cause. Prominence must be given to the characteristics of pure and impure water, the detection of impurity, and the purification of foul water.

The following are the lines of illustration in the order of classification laid down.

SECTION 1.—COMPOSITION.

The following diagrams, specimens, and apparatus should be provided :—

Diagrams of the chemical constituents of various kinds of water, also of the physical features and properties.

Specimens of every kind of water in stoppered bottles placed in a good light with a white background. Various metals showing corrosive or solvent action.

Apparatus for sampling, testing, and analyses.

SECTION 2.—SOURCE AND STORAGE.

Diagrams of wells of all kinds, and well borings,—also showing the circulation from sea back to sea through all changes, and the various phenomena of fog, vapour, cloud, rain, ice, snow and rain, springs, &c.

Maps of watershed areas—rainfall—geological strata.

Photographs of lakes—rivers—springs—wells—waterfalls, &c.

Apparatus. A model showing the geological formation suitable for an artesian well, with water laid on in action. A model to illustrate the movement of water in a permeable surface soil and its relations to shallow wells. Specimens of well boring and well sinking apparatus, and methods of discovery. Models of good methods of storage *i.e.* cisterns and reservoirs.

SECTION 3.—POLLUTION.

This section will be best illustrated by diagrams of aerial, animal, vegetable, and mineral matters found in water—soil and surface pollutions in rivers, pools, springs, and wells—diseases communicable—parasites found in water—leaky drains and cesspools—bad storage of water, &c.

Photographs of pathogenic and non-pathogenic organisms.

Models showing how water in a high-pressure main may be contaminated.

Microscope slides would be a good adjunct to this section, for shewing many of the impurities and familiar objects in ordinary water.

SECTION 4.—PURIFICATION.

A diagram should be provided shewing and calling attention to the two classes of impurities, viz., suspended and dissolved; also of the classification of organic and inorganic impurities. It will then be more readily seen how some methods deal with one principle, but fail to affect others.

Photographs and diagrams should be provided to shew the natural agencies of light, air, and vegetable life in the purification of water on its course in a river, &c.—sand filters for public purposes—results of tests of various well-known filters—softening processes—sterilizing apparatus on a large scale.

Specimens of filters, with a clearly written statement as to their suitability or unsuitability for various purposes, particularly in regard to their usefulness or otherwise in reference to organic or inorganic matters—filtering materials—materials used in softening processes—sterilizing and softening apparatus for domestic use—rain-water filters, separators, and storage cisterns.

SECTION 5.—SUPPLY.

Diagrams of the quantity required for various purposes by men and animals—advantages of constant *v.* intermittent systems—Roman aqueduct.

Specimens of valves—hydrants—water-measuring apparatus—waste detectors—gauges—pipes protected from the action of soft, hard, and mineral waters—frost-burst pipes—rat-gnawed pipes.

Models of wells, pumps, rams, windmills, water-wheels, &c.

NOTE.—In each of the above sections water is required for shewing models or apparatus in action: therefore water should be laid on. Provision must also be made for carrying off waste. Fire hydrants and appliances for the safety of the building may be exhibited in this section.

Division C. Soils.

Next to the subject of water from a health point of view the question of soils must rank in importance, but many of the features of illustration can only be illustrated by diagrams. Specimens of various soils, which can be extended very widely to include local and foreign, will occupy a large space in—

SECTION 1.

Specimens must be distinctly labelled, as the description is the most interesting feature; and the suitability or otherwise for building upon or its water-bearing properties should be stated.

Diagrams of excavations—geological strata—minerals in situ—rubbish shoot—dampness and its cause.

Photographs of various kinds of bacteria found in soils. Model or diagram on a large scale, showing the geological strata of the district in which the museum is situated. Specimens of soils suitable for earth-closets and the disposal of sewage.

SECTION 2.—SITES.

The various railway companies will often supply a set of photographs of town and country scenery, which will splendidly illustrate the variety of sites and health resorts of the country; in addition, a statement should be exhibited as to the desirable and undesirable things in a site for building purposes,

Photographs of slum life, insanitary areas, and model villages and groups of cottages should be shown here, also illustrations of re-constructed areas.

NOTE.—The details of house construction will be dealt with in another section.

SECTION 3.—WATER-BEARING SOILS.

These will be included in the specimens mentioned in section 1, and if the geological model or diagram is prepared in that section the pervious and impervious strata will be indicated, while the model of an artesian well suggested in division B. section 2 will further illustrate this subject.

A diagram should be made to show the cause of springs both constant and intermittent.

The effect of minerals on water could also be illustrated in this section, and the principal medicinal waters and watering places introduced by specimens or photographs. These will readily be supplied by the institutions interested.

SECTION 4.—PERMEABILITY.

Air and water pass readily through nearly all kinds of soils, and this is best realised by models, which are easily made, and which show both air and water permeability.

Diagrams showing the practical application of the above principle in cases of dampness from either underground flow of water or capillarity, and emanations from any source of contamination, such as buried organic matter in refuse "tips," churchyards, leaky gas mains or sewers.

Division D. Personal.

The illustration of this division is easier and can be more varied; and, further, is of a more popular character. In the scheme now proposed, it is suggested for the gallery, as visitors will be more attracted by it, and the illustrations are more easily adapted to that position.

SECTION 1.—PHYSIOLOGY can be extended indefinitely if desired, but from a strictly hygienic point of view, it is only necessary to deal with it from the elementary standpoint, and not from the strictly physiological. There are numerous sets of splendid diagrams, not expensive, which should occupy all the available wall space, and

a few well-chosen models of the human body should be exhibited. The latter, in plaster or papier mache, can be obtained with dissectible parts suitable for demonstration purposes.

A most instructive case can be made up, showing the constituent elements and compounds of the human body. The physiology of animals for comparative study is useful and essential, and the structure of a few plants serves to illustrate some of the great principles of life and growth.

For use with microscope, specimens of all tissues, such as blood, fat, muscle, bone, should be provided; and, in this connection, specimens of diseased human tissues, such as tuberculous lungs; lungs of chimney sweep, steel grinder, potter, &c., can be introduced.

SECTION 2.—FOOD.

This section deserves plenty of room and careful attention; it will be of much value and is invariably popular; the scope is unlimited. Only indications are given below of the lines of illustration.

Diagrams showing classification of foods—the chemical constituents of animal and vegetable foods—daily waste and daily requirements of human adult—dietaries suitable for young, adult, and old persons at rest, active, and at work—principles of digestion—specimens of milks, including human, cows, asses, goats, &c.—apparatus and instructions for testing milk.

Models of vegetables and fruits.

Specimens of elements and compounds of foods, including starch, sugars, albumen, cereals, pulse; vegetable and animal proteids; and carbo-hydrates.

Preserved fruits, &c. cooking utensils—various drinks, including water, tea, coffee, cocoa, milk, alcoholic, mineral waters, &c.—colouring matters, harmless and injurious, used in confectionery, &c.—parasitic diseases produced by animal and vegetable foods, including tape worms, round worms, flukes, hydatids, trichina, filaria—foods sometimes substituted, coffee, chicory, butter and margarine, milk and cream and water, vegetable and animal fats, tongues of cow and horse, kidney of cow and horse, horse flesh and beef, cat and rabbit food preservatives, with statements as to safe and injurious quantities—fungi, poisonous and non-poisonous.

Milk sterilizing apparatus.

NOTE.—Microscopic specimens in all branches of this subject can be obtained and should be available for the student in the microscopic section.

SECTION 3.—CLOTHING.

Diagrams and photographs of shape and design of costumes showing fashions, styles and peculiarities in various ages, countries, and societies.

Diagrams showing injuries to body through tight or ill-fitting dress including waist, foot, and head.

Specimens of cotton, hair, wool, flax, hemp, silk—fabrics made up including woollen, cotton, silk, hempen, flannelette, cellular cotton, linen—dyes and ornaments used for dress purposes—hygienic materials and shapes including hats, hose, corsets, suspenders, and shoes.

Apparatus demonstrating hygrometric properties of various materials. Illustrations of porosity and ventilation.

A good and interesting method of illustrating this subject is to have a number of dolls dressed in various styles.

SECTION 4.—HABITS.

Under this heading scope is provided for introducing any amount of moral teaching; indulgence and intemperance of every kind can be shown up to advantage or disadvantage, and the fields of food, drink, exercise, pastime, work, hobbies, and recreation afford unlimited suggestions for illustration.

Examples of muscular action—diagram of principles of energy, transmission from food to muscle—statement of value of exercise—diagrams of effects of exercise and the effects of neglecting same (Sandow *versus* obesity)—list of diseases encouraged by sedentary occupation and want of exercise—specimens of apparatus for all athletic exercise with illustrations of the pastimes of golf, tennis, cricket, swimming, walking, running—illustrations of kinder-garten and physical exercise for the young—ablutions and bathing illustrations.

List of occupations, showing them in order of healthiness, from the Registrar General's report.

Diagrams showing dangers of idleness—effect on spine from sitting in bad posture.

Specimens—parasites due to uncleanness and neglect.

Diagrams—injuries caused by nicotine and narcotic poisoning.

A Metropolitan Museum.

THE metropolitan borough of Stepney is taking the lead in museum work amongst the newly constituted boroughs of the metropolis, and it is to be hoped that their example will exert an imitative influence on the other municipalities. Stepney had the good fortune to take over the well-arranged museum known hitherto as the Whitechapel museum, and they have been able to secure the permanent services of Miss Kate M. Hall, whose work as curator of the Whitechapel museum has excited the admiration and called forth the commendation of all who have any acquaintance with museum work. In order to consolidate and extend the work of the museum, Miss Hall has recommended the museum committee to apply for the adoption of the Museums and Gymnasiums Act in Stepney, but, unfortunately, the council has not sanctioned this. In a report to the committee, Miss Hall sets forth what should be the aims of a metropolitan borough museum, and her suggestions are of such practical value, with obvious suitability to other museums, that their publication here may prove useful to many other curators.

WHAT SHOULD BE THE AIMS OF A METROPOLITAN BOROUGH MUSEUM?

By KATE M. HALL, Curator, Borough Museum, Stepney.

A Metropolitan Borough Museum should exist for the pleasure and instruction of the inhabitants, who pay for it, and as a means of education for their children.

Primarily it should serve as a safe repository for all objects of local antiquity and permanent historic interest. The formation of such a collection should be one of the first duties of all the metropolitan borough authorities, and no opportunity should be lost in making it as full and as instructive as possible.

After the local collection, which should form the central purpose of the museum, the authorities may choose to instruct and interest the people in natural history, arts or crafts, etc. The objects exhibited should be limited in number, carefully chosen, well labelled, and as beautifully housed as possible.

The aim of the exhibited collection should be to attract judiciously the ordinary visitor, and inspire him with an interest and enthusiasm for the subject illustrated, and not weary him with details.

Details, however, within limits, should be at hand for students and for demonstration purposes, in the form of a reserve collection kept in drawers.

Apart from its central purpose, the London local museum should aim only at being a stepping-stone to the better understanding of our larger national museums. Great care and discrimination should be exercised in accepting gifts. None, as a rule, should be received with conditions.

The authorities should have a definite purpose in view, know what they want for their museum, and do their best to acquire it. Means should be found to carry out whatever is attempted as perfectly as possible. Dirty, dilapidated and badly mounted specimens are neither instructive nor educational.

In the arrangement of the collections the needs of the locality should be most carefully considered. It is possible that natural history would form one of the most valuable means of general instruction and education, and especially so in East London, where man has crowded out most other living things.

The museum should not only be a source of pleasure to the general visitor; but in order to carry out its function as a means of education to the children, it should be in immediate touch with the schools of the borough, and ready to illustrate either natural history or other lessons given to the children in the schools.

The educational authorities cannot fail to recognise the advantages which would be afforded to their schools by a well-equipped central museum, and will, without doubt, when applied to, be found willing to bear their share of its support.

Attached to the museum should be a hall for lectures, and a room which could be used for demonstrations, temporary exhibitions, or for the meetings of societies especially interested in the collections, as the Antiquarian or Natural History Society.

Finally, this Metropolitan Borough Museum should stand in some open space, in which a few flowers could be seen growing.

General Notes.

AT HOME.

IMPROVING THE HORNIMAN MUSEUM.—The historical records and buildings committee of the London county council has recommended that Dr. A. C. Haddon, F.R.S., be appointed advisory curator of the Horniman museum, with an allowance for travelling expenses. The committee consider themselves fortunate in securing the services of so distinguished a scientific scholar as Dr. Haddon, and are of opinion that the suggested rearrangement of officials will result in making the museum a centre of objective education.

CURIOUS STORY OF ST. AUGUSTINE'S CHAIR.—At a meeting of the museum committee at Canterbury, the mayor reported the receipt of a letter from the bishop of Hereford, asking for the return of St. Augustine's chair, traditionally stated to have been used by the saint on his missionary journeys. It has for some time past occupied a prominent place in Canterbury museum. The bishop stated that the chair was removed some years ago from the chancel of the church at Bishop's Stanford, and the vicar and parishioners now desired to have it back again. The committee decided to reply that they could not assent to the request, as they considered that Canterbury was the proper place for the chair. It was stated that Mr. C. Johnstone purchased the chair from a former sexton of the church at Bishop's Stanford. The latter had rescued it from the hands of some masons engaged in renovating the church, who were about to burn it for fuel.

EPPING FOREST MUSEUM.—Mr. William Cole, hon. secretary and curator of the Essex museum of natural history of the Essex Field Club, Queen Elizabeth's Lodge, Chingford, writes:—"The committee will be very grateful if you will allow them to direct your readers' attention to the scheme for the re-organisation and enlargement of the Epping Forest local museum. The collections are housed in the notable Tudor building known as Queen Elizabeth's Lodge, Chingford, the fee-simple of which was transferred by the Crown to the Forest authorities at the passing of the Act of 1878. Some six years ago the antique banqueting room of the lodge was fitted up as a museum to illustrate the natural history and antiquities of the spacious forest now so happily preserved for the enjoyment of present and future generations of Londoners. The museum was opened by the then chairman of the Epping Forest committee of the corporation of London, Mr. Deputy Halse, and the late Sir William Flower, on Nov. 2, 1875.

Though at that time only the banqueting room and the spacious staircase could be devoted to the purpose, the quaint little museum quickly became exceedingly popular. It was frequented by tens of thousands of the visitors of the forest, hailing from all parts of London, and by scores of schools and educational and scientific associations, &c. The allotted space proving manifestly insufficient, the corporation of London, acting through their Epping Forest committee, have recently thoroughly restored the Queen Elizabeth's Lodge, under the skilful professional direction of Mr. Alfred Scott, so as to open up the fine oak room (previously occupied by the keeper of the Forest Walk), fitted hot-water apparatus, and built outside rooms for the caretaker, &c., at a total cost of £1,012. To furnish the building as a museum a considerable sum (nearly £500) has been provided by the council and members of the Essex field club and local residents, but about £250 is still required to complete the suite of cases and fittings, and to purchase sets of specimens and models, &c., to supplement the collections contributed by members of the club and others. It is desired publicly to re-open the museum in May or June next, but to enable this to be done, the £250 must needs be in the treasurer's hands during the next few months. The lodge in its present carefully restored and tended state is one of the great ornaments of the forest, being, in the opinion of experts, an excellent and well-preserved example of early Tudor architecture. When the rooms are re-fitted with oaken cases, and the various interesting and instructive collections are arranged therein, we venture to affirm that in few districts will be found a prettier or more appropriately placed little local museum. The upkeep and caretaking of the lodge is the business of the corporation of London, but the scientific arrangement of the collections is undertaken by the Essex field club as supplemental to the Essex museum of natural history at Stratford. It is hoped that persons in and near London to whom Epping Forest is a delight, and who wish to encourage popular intellectual recreation, will gladly contribute to the establishment of the museum on a permanent footing. The institution will not only be useful and suggestive to intelligent visitors to the forest, but will also afford an admirable series of object lessons to children and students in the schools and colleges in the north and east of London, almost insensibly inducing in them that curiosity in the common objects around them, and that love and reverence for nature which it is so desirable to encourage now-a-days. Contributions, large or small, marked 'Forest Museum Re-organisation Fund,' may be sent to the hon. treasurer, Mr. David Howard, J.P., Buckhurst Hill, Essex, or paid into the club's account at Lloyds Bank, Lombard Street."

BRITISH MUSEUM.—The British museum was first opened for study and public inspection on the 15th of January, 1759, so that it is now 143 years of age, and still growing more vigorously than ever.

CELTIC ORNAMENTS DISPUTE.—The question of the Celtic gold ornaments in the British Museum is after all to be fought out in a court of law, between the trustees of the museum and the Treasury. The matter is exciting a deal of interest in the antiquarian world, and the highest legal skill will be engaged in the case on both sides. The law officers of the Crown will, of course, represent the Government, and probably Sir Edward Clarke will be retained for the British museum.

SCARBOROUGH MUSEUM.—A splendid collection of birds, got together by the late Mr. Harper, of Scarborough, has been given to the Scarborough museum by his widow. Many of them have been procured in the Scarborough district, but the collection includes specimens from Nairn, Solway firth, Southport, the Hebrides, the Orkneys, &c. One of the finest cases contains three dotterel, which were obtained at Tarleton, Lancashire. Another very fine case contains a pair of turnstones in their beautiful spring plumage. The collection also includes a splendid specimen of the red-throated diver and a black-throated diver; but, perhaps, the rarest bird of the whole is a specimen of the king eider, which is one of the scarcest British ducks.

ZOOLOGICAL GARDENS.—The fine new building in the Zoological gardens, London, which is in future to form the home of the anthropoid apes, and which has been in course of erection or many months, will be opened to the public at Easter. After that time the old apes' house, which immediately faces the kangaroo sheds, will be used for the accommodation of other tenants than those which have hitherto made this particular quarter of the gardens so eagerly sought after. It was here that the celebrated chimpanzee "Sally" lived for close upon eight years, and where her successor—now the sole representative in the gardens—has proved a not unworthy follower of this accomplished ape. The present monkey-house, which was erected in 1864, at a cost of close upon £5,000, contains representatives of all the principal divisions of the monkey tribe, with the exception of the anthropoid apes. Among all of these death has unhappily been too busy of late.

NATIONAL GALLERY.—Among recent additions is a picture by Luca Signorelli, representing "The Madonna and Child, with St. Sebastian, St. Cristina, St. Jerome, and St. Nicolas of Rari," which bears with it a long and authentic inscription, contemporary with the picture, which fixes the date at 1515,

that is to say, seven years before the death of the painter, which occurred when he was 82 years of age. The picture can hardly be considered one of the artist's greatest works, and as the National Gallery already possessed four examples from his brush, it is doubtful policy, considering the limitations of space, to represent one man by so many works, when he is not of the first importance. Another addition is a picture of the "Adoration," by Benedetto Bonfigli, who flourished at Perugia in the middle of the fifteenth century, and whose name was previously absent from the national collection. The Netherlands section has also been enriched by a "Portrait of a young man," by Rægueneau, who painted at the court of Marie de Médicis, and died in 1638.

REVEALING A MUMMY.—There is sometimes a certain amount of scepticism displayed by the public as to the genuineness of mummies in museums. Hidden in the cartonage, no signs of the actual body are visible, and it is scarcely desirable to take off the wrappings to prove that the body is there, or what it is like. Sometimes important antiquities are placed inside the wrappings, the presence of which is, of course, unknown. Keighley, in Yorkshire, has, however, hit upon a plan of revealing the contents of a mummy case without removing any of the coverings. This has been done by means of the X rays being passed through the mummy wrappings, with the result that the presence of the body was made distinctly manifest.

MUSEUM FEES.—It is more than three years since the select committee appointed to inquire into the administration of the museums of the Science and Art Department issued its report, yet there is very little evidence of the changes it recommended coming into force. One that appeals most strongly to the general public was the recommendation that admission to all the museums be always free. In spite of this, at the present time, visitors are met with the announcement on certain days of each week that the charge for admission is sixpence. People are apt to think that a charge of this kind for admission to a museum maintained out of public taxes is not only exceedingly mean, but eminently unfair; and, judging from the small number of people in the museum on those days when a charge is made, the income obtained in this way must be an exceedingly small one. Why the Victoria and Albert Museum should make a charge for admission, while the British (Nat. Hist.) Museum is open every day free, is one of those anomalies that only a government official could explain. By the report of the committee the principle of making a charge for admission to a national museum has been emphatically condemned, and it is quite time that the practice was abolished.

NATIONAL PORTRAIT GALLERY.—A catalogue of the National Portrait Gallery, edited by Lionel Cust, is in course of publication by Messrs. Cassell & Co., the first volume of which has just been issued. There will be two volumes, limited to 750 copies, the price being six guineas net, so that it is not intended to be for general circulation.

ART LECTURES.—Mr. Robert F. Martin, of the Victoria and Albert Museum, has an excellent series of art lectures which he delivers in various towns of the kingdom, and no more interesting or popular method of enlightening the public on those subjects treating of the illustrations of art in its various forms in public museums could be desired. The treasures of the Victoria and Albert Museum are clearly explained, and the departments of art which it illustrates are all dealt with under their respective headings. It must be of great advantage to all the towns receiving loans from the Victoria and Albert Museum to have their exhibits described in detail by this method, and their relation to art-work in general brought out clearly by the excellent slides which Mr. Martin uses in his lectures, the far-reaching educational value of which cannot be over-estimated.

BRADFORD ART GALLERY.—The magnificent gift made to Bradford by Lord Masham is furnishing that town with an art gallery that will bear comparison with any similar institution in the provinces. It was hoped that the building would be completed this year, but owing to protracted labour disputes it will probably not be ready for use until 1903. Lord Masham offered £40,000 to the corporation for the purpose of erecting on the site of his old home in Lister park an art gallery and museum, as a memorial to Dr. Edmund Cartwright, the inventor of the power loom and wool-combing machine. Designs were chosen in open competition; but after tenders were submitted it was found that owing to the increase in the price of labour and material, the estimated cost of erecting the building had risen to £55,000. Lord Masham generously added £7,500 to his original gift, and the building was begun at once.

THE PETRIFIED FOREST OF ARIZONA.—The trustees of the British Museum have purchased a magnificent log of chalcidized pine-wood, from the petrified forest of Arizona. It is about two feet high, one foot six inches in diameter, and is cut across obliquely and beautifully polished. The exterior bark is particularly perfect, and in places knots are seen, whence branches arose; the growth-rings are exceptionally well shown in the section; and the crystals of silica in the heart of the trunk have taken the polish far better than usual in such

specimens. It is at present exhibited, along with a photograph of a large trunk *in situ*, in the central hall of the Natural History Museum. These, and minor specimens, showing details, were obtained for the British Museum by Mr. A. N. St. John Mildmay, now staying at 309, West Tenth Street, Sioux Falls, S. Dakota, U.S.A. Owing to the closing of the petrified forest by the United States government, the price of specimens is rapidly rising.

BRISTOL MUSEUM.—The report of the Bristol museum committee for 1901 seems to show a satisfactory progress, both in the re-mounting and rearrangement of the old collections, and in accessions to the museum. Under the first heading we notice that the liassic reptiles, of which the large series was in a very bad state, have been repaired by an expert workman from the British Museum; the exhibited birds have been thoroughly cleaned, re-poisoned, and in many instances re-mounted; the collection of armour and weapons has been overhauled, and the process of cleaning has revealed many objects of much interest. Among accessions may be mentioned a comprehensive and continued series of Egyptian antiquities, presented by the committee of the Egypt exploration fund. A large part of the natural history collection of the late Sir Greville Smyth has been presented by Lady Smyth; this includes a well-preserved egg of the great auk, an egg of *Aepyornis maximus*, the nest and eggs of many other birds, numerous birds' skins, British and foreign lepidoptera, foreign coleoptera, and a fine set of shells of mollusca. Several isolated donations illustrate the history of Bristol and show the local interest that is being aroused in the museum; more valuable work would, however, be done in this section by organised effort on definite lines; the history of so ancient a port as Bristol should lend itself to display by modern museum methods. The improvement, however, of late years in the arrangement of this really rich museum has been very great, and is viewed with pleasure by those who were acquainted with the museum in its unregenerate days, not so long ago. With this advance in exhibition method, interest in the museum has been wonderfully stimulated. Not only is there a long list of donations, but the number of visitors has nearly doubled in the past four years. Since other circumstances have remained unchanged, due credit for the improvement that has taken place since his appointment must be given to the curator, Mr. H. Bolton.

The Geological society of London has a museum, or perhaps one should rather say a collection, containing, among a mass of heterogeneous material, several specimens of interest as types, or as having been referred to in papers read

before the society. It has, however, long been felt by many fellows of the society that the museum is rather a white elephant, which if it is to remain in its present quarters must either fall into decay and confusion, or else cost the society for its upkeep a larger sum than can be justified by the number of visitors. The justice of this view is confirmed by three statements in the report of the society's library and museum committee for 1901—no addition has been made to the collections during the past year; for the purpose of study and comparison the collections were examined on ten occasions only during the year; 814 drawers have been glazed at a cost of £26 12s. 1d., and are thus rendered "fairly impervious to dust." There are those who would like to see the collections transferred to some museum, where they would be more accessible, and who would utilise, for the expansion of the library, the space and money so gained. The Rev. J. F. Blake, however, who wishes to see the collections retained by the society, has undertaken to prepare for publication a catalogue of the more important specimens in the museum, on the basis of a manuscript catalogue by Mr. C. Davies Sherborn; and the council recommend that no further action be taken with regard to the museum till this catalogue is in the hands of the fellows.

HULL MUSEUM.—Publication No. 5 of this museum consists of a collection of reprints from the *Eastern Morning News*, which deals with recent additions to the collections. This plan of chronicling new "finds" in the local press seems to be an excellent one for maintaining and arousing public interest in the museum, and in those branches of knowledge which the museum is intended to illustrate. It also calls attention to the class of things worthy of conservation, and may lead to the rescue of many an object that would otherwise have been destroyed. The most important addition dealt with is an unpublished manuscript map of the river Hull, dated 1668. This throws a good deal of light on the history and topography of Hull and its immediate neighbourhood, and helps to solve several puzzling points in the etymology of place-names. Amongst other acquisitions dealt with are some remains of Roman pottery, stone axes, old lamps, an "acoustic" jar, a sand box, and a number of miscellaneous natural history specimens. The curator makes an appeal for old maps, plans, and prints illustrating Hull in the past; and for photographs of old churches, crosses, fonts, tombs, &c., and, more especially, for such as are about to be abolished, or to undergo restoration.

BRITISH MUSEUM.—The naturalists on board the *Discovery* have sent home the collections made during the first part of

the voyage. The specimens have reached the British (Nat. Hist.) Museum, and have been handed over to the authorities of that institution by the Antarctic committee. The series includes a number of specimens obtained on the uninhabited oceanic island of South Trinidad, on which no naturalist had ever landed, and these promise results of great interest. The birds include a specimen of a very rare species of petrel, of which only one other example is known.

RELICS AT THE GUILDHALL MUSEUM.—The collection of antiquities formed by the late Mr. James Smith, of White-chapel, "the working-man archæologist," has just been disposed of by public auction. The Guildhall and the South Kensington museums have secured some of the finest specimens. The Guildhall library committee's purchases include some very fine series of knives of the Roman, mediæval, and later periods several of the knives bearing the makers' marks, while many have most artistic handles. The purchases also include some Roman bronze objects, namely, fibulæ, rings, buckles, enamelled ornamental badges, and other objects of a later date.

SCHOOL OF ART MUSEUM, MANCHESTER.—Some interesting additions have been made to the Municipal Arts and Crafts Museum at the School of Art, Cavendish street. A beautiful marble basin of a fountain of fourteenth century workmanship, from the courtyard of a Venetian palace, has been presented by Mr. William Simpson. Three cartoons for glass by Sir Edward Burne-Jones have been given by Mr. Edward Donner, and there is on loan a cartoon by the same artist which was the design for the lovely central crucifix window in Troutbeck church. Another loan is a design for glass at Eaton Hall, by Mr. Shields—a symbolic figure of "Obedience." The committee has bought the three large cartoons by Mr. Shields which were the designs for the glass in St. Ann's Church; the subjects are "St. Paul," "St. Peter," and "Moses." There is a loan collection from the South Kensington Museum, which consists mainly of Oriental work, objects of art from Italy, and bookbindings. There is also on loan a small but choice selection of the work of Mr. Cobden-Sanderson, the well-known bookbinder.

EDINBURGH MUSEUM OF SCIENCE AND ART.—There has been placed on temporary exhibition at the museum a small collection which should prove of considerable interest to teachers and others interested in such methods of training hand and eye as may be practised in elementary schools. One of the most complete of the many courses carried out last summer for the further instruction of teachers in this section

of their work was that conducted at St. Andrews in July and August, and the essential part of the collection now shown is a full series of the exercises worked in that course. The subjects taught were (1) woodwork, (2) cardboard modelling, (3) clay modelling, (4) free-arm brush and blackboard drawing, and (5) elementary handwork. The teachers were drawn from Edinburgh, Glasgow, St. Andrews, and Perth, and as each was of recognised skill and experience in work of this kind, the courses they arranged and the exercises worked by the students form excellent illustrations of lines of instruction that have been found effective in practice. Temporary accommodation has been found for them in a part of the gallery now under rearrangement for the accommodation of the permanent collection for the illustration of the teaching of science in schools. The exercises show the relation of the preliminary geometrical drawings to the woodwork and modelling, and the development of simple designs on conventional forms and from natural objects. As the Scottish Education Department lays down no hard and fast syllabus of instruction, there have been placed in the collection examples of other courses of instruction for similar purposes. Thus there are several sets of exercises worked by the teachers in the Ambleside summer course in brushwork and design; there are also complete sets of work done by Scottish teachers at the course of instruction at Leipzig last year, these comprising metal work and cardboard modelling. In view of the difficulties which have been alleged to attend instruction in free arm drawing, some interest attaches to the appliances shown as having proved satisfactory in use. These include linoleum lining to be placed on the schoolroom wall, a double easel with composition or other boards, a special desk which can be arranged so as to afford convenience for all classes of art teaching as well as for ordinary school work. Probably, however, the simplest provision involved in the methods exhibited is that by which existing school desks may be utilised by placing a sheet of millboard in front of each pupil for the drawing lesson.

SIDNEY COOPER'S PICTURES.—There are probably few public galleries without an example of the work of T. Sidney Cooper, R.A., who has just passed away at the ripe age of 98. Almost up to the time of his death Mr. Cooper continued to use his brush, contributing several works to the Royal Academy even as late as last year. For some years past, however, his pictures have been lacking in the naturalness and vigour that distinguished the work of his middle age, and there will, no doubt, be a general differentiation of his work into periods of varying value. Probably there was no man whose works were so ruthlessly copied—even to the forging of his

signature—and palmed on to a too-confiding public. In consequence of the large number of his supposed pictures sent to him for verification, or otherwise, Mr. Cooper made a charge of five guineas for each picture on which he gave an opinion, giving at the same time a small sketch of the picture by himself, as some return for the fee. In a trial at Carlisle in December last, a letter was read from Mr. Cooper, in which he stated that 286 pictures had been submitted to him for verification, and he had found 256 of them to be forgeries—many of them bearing his forged signature. In face of such a disquieting statement as that, and considering the great popularity of his pictures, it is very desirable that a list of his genuine works should be published, a task that might easily be carried out by his executors from the particulars given in his books and papers. For it was not only the unlearned who were deceived by these copies, but some of the victims were to be found among the wisest of men. A forcible instance of this is told in Mr. Cooper's *Life*, where he records the incidents of a breakfast with Mr. Gladstone. After breakfast, Mr. Gladstone said he would like to show his guest a small picture he possessed which had been painted by Mr. Cooper, and which Mr. Gladstone had purchased some time before. On seeing the picture Mr. Cooper was very much distressed to have to admit that that was his first acquaintance with it, and that it was not painted by him. To soothe the disappointed feelings of his distinguished host, Mr. Cooper specially painted a small picture which he gracefully presented to Mr. Gladstone.

ABROAD.

Dr. J. V. Želízko has been appointed assistant in the museum of the Austrian geological survey at Vienna.

Dr. J. Kriechbaumer, senior curator of the zoological collections at Munich, has retired.

Dr. Belowsky, assistant in the mineralogical and petrological department of the Museum für Naturkunde in Berlin, succeeds the late Professor Tenne as Custos of that department.

Dr. Gerhard E. Holm, whose researches on Silurian Invertebrata in his position as palæontologist to the Swedish geological survey are so highly esteemed by zoologists, has been appointed successor to the late Gustaf Lindström, as professor of the Swedish academy of sciences in charge of the fossil invertebrata of the state museum in Stockholm. He is the right man in the right place.

PERTH MUSEUM, W.A.—Although there is now a State museum at Perth, Western Australia, the collections of the Geological Survey of the colony still occupy cramped and inconvenient quarters. The government geologist, Mr. A. Gibb Maitland, in the recently issued Annual Progress Report for 1900, suggests that the offices and collections of the survey might readily and appropriately be housed in the contemplated additions to the museum. Such concentration is always advantageous to science and no less advisable in Perth, W.A., than in the heart of the empire.

FRENCH ART.—Once more the French Government has been warned of the great danger of the art treasures of the Louvre being destroyed by fire through the continued occupation of the Pavillon de Flore by the Minister for the Colonies. The press and other authorities have long urged the removal of the ministry, and now the chief of the fire brigade, charged to investigate the matter has reported that the presence of the Colonial Office amid so much valuable and inflammable material places the Louvre in continual danger. It is to be hoped that the State will pay attention to this official warning.

The State has now taken possession of the Thomy-Thiere collection, which contains splendid examples of the best modern painters, bronzes by Barye, and Gobelins products, the whole being estimated at more than ten million francs. As there is no room at the Louvre just now, it may be some time before these treasures are exhibited.

It is commonly understood that a picture purchased for the Luxembourg is placed in the Louvre some ten years after the death of the painter. Of late years, however, this passage of works from their temporary to their final resting-place has not been made, some two decades having elapsed since any painting has been transferred from the Luxembourg to the Louvre. And to-day there are many eminent artists waiting in "purgatory," as the Luxembourg is called, for their entry into the glory of the Louvre, among them being Baudry, Meissonier, Cabanel, and Bastien Lepage. The chief reason for this delay is the crowded state of the national museum. And yet the Minister of the Colonies remains in the Pavilion of Flora.

MUSÉE CARNAVALET.—The musée Carnavalet has an interesting collection of the masks of great Frenchmen. Besides those of Hugo and Flaubert, just presented, there are fine mouldings of the faces of Béranger, Sainte-Beuve, Henri Regnault, the artist who fought in the Franco-German war, Gustave Lambert, Gambetta, Mirabeau, Marat, Napoleon, and the Duke of Reichstadt.

MOREAU COLLECTION.—The museum left to the State by the late Gustave Moreau not having been accepted yet, the Treasury has intervened. It has demanded the rights of succession from M. Moreau's executor, that gentleman having, in default of the State, looked after the museum at enormous personal trouble and expense. The result of this move on the part of the Treasury is that the house and its valuable collection are to be sold by auction, although it seems that the city of Paris is quite willing to accept the museum. There are various reasons given for the non-acceptance of the museum, among them being jealousy on the part of certain painters who do not wish to see Moreau honoured in this way.

CARNOT MUSEUM.—M. Philippe Deschamps, who has founded at Fontainebleau the Carnot museum, containing objects connected with President Carnot and Alexander III., as the creators of the Franco-Russian alliance, now proposes to present to the Paris municipality 4000 pictures and other articles respecting the present Tsar and his visits to France. These would form a second alliance museum.

MAMMOTH.—The expedition under the zoologist, M. Herz, which was sent to Holymysk by the St. Petersburg academy of science has arrived at Srednekolymysk with the remains of an excavated mammoth. The skeleton and hide are in a state of almost complete preservation. In the stomach of the animal, which is a male, the remains of almost undigested food have been found. The various parts will be conveyed to St. Petersburg in a frozen state.

NATIONAL MUSEUM.—The board of regents of the Smithsonian Institution has appointed a committee of six (Senators Platt, Cullam, and Cockrell, and Representatives Hitt, Adams, and Dinsmore) to represent to Congress the pressing necessity of additional room for the proper exhibition of specimens belonging to the United States National Museum, and of additional appropriations to carry on the work of the museum.

ART GALLERY FOR ROME.—The negotiations for acquiring the famous villa Borghese for the Italian nation make steady progress. A meeting of members of the family, held within the past few days to discuss the question, was unanimously favourable to the sale. The only difficulty is one of terms. There is some doubt as to whether the £120,000 already voted will be accepted. At present the family are disposed to hold out for another £60,000. Once the villa, with its splendid surroundings, becomes public property, all the art collections of every kind possessed by the State in Rome will be trans-

ferred to it. These superb treasures of art will then find a home in every way worthy, from its own history and associations, to receive them.

LOUVRE MUSEUM.—The newly discovered picture by Rembrandt, found in a remote corner at Compiègne, is in its cleansed condition about to be exhibited at the Louvre, where will shortly be opened the halls containing collections of sketches by various masters. Baroness Alphonse de Rothschild has offered to the museum some valuable religious relics in addition to the gifts of the baron. These last are valued at 3,392,250 francs.

M. MILNE-EDWARDS.—A bust of the notable savant, Alphonse Milne-Edwards, the lamented director of the French natural history museum, is about to be executed by M. Marqueste. The model, which is already finished, is much admired. The bust, when ready, will find a place in one of the galleries of the museum that owes so much of its completeness to the life-labours of Professor Milne-Edwards.

CONSTANTINOPLE WITHOUT A MUSEUM.—Dr. P. S. Sclater, the secretary of the zoological society, has just returned from a trip to Constantinople. As was to be expected from the fact that the Turkish government is not given to recognise science of any kind, he saw nothing in the shape of a museum at Constantinople except a collection of antiquities; but in the excellent American institution called "Robert college," near Bebek, on the Bosphorus, he found an interesting collection of the birds of the vicinity of the city, consisting of from 700 to 800 mounted specimens obtained at various points on both sides of the Bosphorus. One of the finest collections of birds seen by Dr. Sclater during his tour is that in the National Hungarian museum at Budapest, comprising some 40,000 specimens in excellent order.

EXCHANGE AND SALE COLUMN.

Advertisements for museum specimens, books, fittings, or appliances can be inserted in this column. Sixpence for the first ten words, and threepence for every ten words afterwards.

FRANK SUTER & Co., Ltd.,

. . Electrical Engineers, . .

**Designers and Manufacturers of Electric
Light Fittings.**

SPECIALITY :

Picture and Museum Case Lighting . .

. . By Suter's Registered Reflectors.

FRANK SUTER & CO., Ltd.,

66, BERNERS STREET,

. . LONDON, W.

Marine Biological Association of the United Kingdom

Specimens of MARINE ANIMALS and PLANTS specially preserved for Museum purposes. For detailed Lists and Prices apply to

THE DIRECTOR, BIOLOGICAL LABORATORY, PLYMOUTH.

NS, Ltd., ESTAB.
1846.
, LONDON, E.C.

Museums or Private Collections.
Lundries to the British Museum, &c.
of any description made to order.

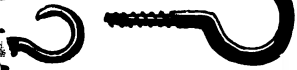
Patented. 3/6 per gross
It has a sharp needle point.
Set in any position in trays or
stands, &c. Altogether one of
the most introduced and very cheap.



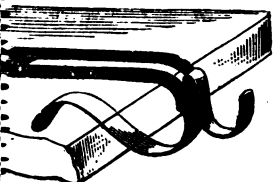
3.-12/- per gross.
biting specimens from edges of glass
or wood shelves.

Hooks for Cases, &c.
Guaranteed truly tapped, bronzed
(non-corrosive).

dium Large K
K



per gross. 10/- gross.



STEEL SHELF HOOK.
Specimens from 1/4 or 3/8 inch shelf.
9/- per Gross.
Each shelves at same price.



04. Price. 3/- per gross.
descriptive labels. Having two spikes
which rigid when once pressed into
the plate will be sent Free on application.



Dersgate Stand (Patented)
Hanging descriptive cards at any angle.
in. by 1 1/2 in. .. 10/- per gross
in. by 2 1/2 in. .. 24/-

Ltd., **BSTAB.**
1846.

LONDON, E.C.

ries to the British Museum,
um, Horniman Museum,

5, Illustrations, and Samples, on



No. ST3.

"Simplex" Shelf Clip.

ing specimens from $\frac{1}{4}$ or $\frac{1}{8}$ in.
pecially useful for long narrow
labels.

per dozen; 15/- per Gross.



Glass-Topped Specimen Boxes.

White paper inside and black out-
side used at the Geological Museum,

	Depth.	
by $\frac{1}{8}$ in.	18/-	per gross.
by $\frac{1}{4}$ in.	21/-	"
by $\frac{3}{8}$ in.	24/-	"
by $\frac{1}{2}$ in.	27/-	"
by $\frac{3}{4}$ in.	31/-	"
by 1 in.	36/-	"
ported equally	27/-	"

ents are quoted A y, ther size,
ide to order

oke in the following size covered

in...	24/-	per doz.
in...	30/-	"
in...	36/-	"
in...	42/-	"
in...	48/-	"
in...	60/-	"
in...	72/-	"



Net Cardboard Tray for
Specimens.

width, and finish as boxes No. 14,
out are $\frac{1}{2}$ in. high.

2	3	4	5	6
6/-	7/6	9/-	10/6	per gross

Larger sizes to order

board for Mounting or Writing

	Per doz.
24 by 19, 6-sheet cardboard,	2/3
24 by 19, 8-sheet cardboard,	2/6
24 by 19, 12-sheet cardboard,	3/-
24 by 19, stout tinted board,	3/6
ivory card, 24 by 19, thick,	4/6
ivory card, 24 by 19, medium,	4/-
ivory card, 24 by 19, thin,	3/6

above sizes at half the prices.

SONS, Ltd., ESTAB.
1846.
LONDON, E.C.
Exhibition or Private Collections.

BRACKETS, **ES.**

cket J.

Standard Bars
Quality and Finish.
Sizes are stock'd:—

BRONZED

10	12 inch.
2/3	2/9 each.
21	21 inch.
6/6	8/6 each.

IRON (Warranted).

10	12 inch.
1/6	1/8 each.
21	24 inch.
4/6	5/6 each.

BASES.

earnestly solicited to
well for many purposes,
impulsory. We quote
FULL VALUE. Packing
condition, carriage paid,

L TAPPED BAR; Brass, Bronzed, 1/- per foot

not less than 4 feet.
Drop Doors
AD VALUP, gin. high
weable Trays.

35/- per foot.
30/- "
25/- "
22/6 "



14.—Useful Cabinet for private
ectors or Duplicate Specimens.
nt wood covered cloth. brass handles.
15 by 12 by 8 (4 drawers) **16/6**
18 by 15 by 20 (5 drawers), **21/-**
20 by 18 by 12 (6 drawers) **25/-**
34 by 20 by 16 (8 drawers), **30/-**

Ltd., ESTD.
1846.
LONDON, E.C.

Private Collections.

DIMENSIONS.

Total height, 6ft. 3in. (excluding ornamental iron cresting and finials).

Table Height, 2ft. 9in. Depth, 4ft. 6in.

Total height of Show Case (excluding cresting), 5ft. 6in.

Height of upper part of Show Case, 2ft. 13in.

Depth of upper part of Show Cases, 14 in.

The lower portion of Show Case measures at its highest 5in., and at its lowest 3in.

Bottom of Case is covered with Claret or Blue coloured Cloth. The under part of Case is fitted with Drawers, three in height and length, according to dimensions of Case. All Sashes are made in the "air-tight" principle and Glazed Plate Glass.

ft. by 4ft. 6in. by 6ft. 3in., 18 Drawers, **£66 10/-**

9ft. by 4ft. 6in. by 6ft. 24 Drawers, **£78 10/-**

12ft. by 4ft. 6in. by 6ft., 30 Drawers, **£95**

If delivered outside London, an extra charge is made for packing, according to size, varying from £3 upwards.



Many Plate-Glass Case.

Round and top, carved pedestal, with one full-sized plate-glass and brackets. Splendid

B Quality,
A Quality, without pedestal
air-tight. ment or inside
fittings.

£15 5 0	£9 17 6
18 10 0	12 15 0
21 15 0	15 10 0
25 0 0	18 10 0

above, 37/6, 57/6 & 72/6 extra.
made for all purposes—any
plates and drawings supplied
application.

BOTANICAL SPECIMENS

FOR MUSEUMS.

CONES OF RARE CONIFERS.
INFLORESCENCES OF CYCADS,
CYCAS, ZAMIA, MACROZAMIA,
CERATZAMIA, STANGERIA, ENCEPHALARTOS, &c.,
MALE AND FEMALE.

SECTIONS OF BRITISH AND OTHER TIMBERS.
SPECIMENS FROM THE TROPICS.
SPECIMENS IN ALCOHOL and other media.

Models of British Fungi.

ECOLOGICAL SPECIMENS.

ANATOMICAL SPECIMENS.

HERBARIUM SPECIMENS.

Insectivorous and Parasitic Plants.
SETS ILLUSTRATING ECONOMIC PRODUCTS.
PATHOLOGICAL SPECIMENS.
FOR PARTICULARS SEND FOR SPECIAL PRICE LIST.

J. BACKHOUSE & SON, LIMITED,

THE NURSERIES (Scientific Department,)

Telegrams: "BACKHOUSE, YORK
'Scientific.'"

YORK.

W. D. WEBSTER,

Home Court, 24, Palace Road, Streatham Hill,
. . LONDON. . .

COLLECTOR OF ETHNOGRAPHICAL SPECIMENS,

**EUROPEAN AND EASTERN ARMS AND ARMOUR,
PREHISTORIC AND OTHER ANTIQUITIES.**

Telegraphic Address: "ETHNICALLY, LONDON."

ILLUSTRATED CATALOGUE published every three months. Each copy contains 20 plates reproduced from photographs, and is subscribed to by all the principal Museums in the world. Subscription 10/- per year, post free, payable in advance.

A few bound Catalogues can still be obtained at the following prices:—

Vol. 1 contains Catalogues	Nos. 1 to 10	- - -	30/-
Vol. 2 ditto	Nos. 11 to 17	- - -	20/-
Vol. 3 ditto	Nos. 18 to 23	- - -	25/-
Vol. 4 ditto	Nos. 24 to 27	- - -	25/-

The Collection consists of over 10,000 specimens from all parts of the world, any of which will be sent on approval on carriage being paid.

SPECIMENS BOUGHT OR EXCHANGED

EVERY MUSEUM SHOULD HAVE

A HEALTH SECTION

**BECAUSE IT IS IMPORTANT, PRACTICAL AND INTERESTING
IF DESIGNED ON POPULAR AND PROPER LINES.**

Advice and Help on this Subject can be obtained by application to

**THE HYGIENIC REFERENDUM,
FERRESTONE ROAD, HORNSEY, N.**

A. S. HUTCHINSON, —

Naturalist, Furrier and Taxidermist to . . .

Manchester, Sheffield, Derby and Oldham Museums.

Undertakes all kinds of plain and artistic taxidermy. British Birds and Animals supplied at the usual prices. Private and public Museum Collections attended to and kept in good condition at a reasonable cost per annum. Work executed in any part of the kingdom.

A. S. HUTCHINSON, 85, London Road, DERBY.

Photographs of

Familiar Trees

Plants & Flowers

in their SUMMER and WINTER appearance, with enlarged views of their bark, leaves, flowers and fruit. showing details of structure and growth.

MAY BE SEEN at the British Museum; Royal Art Library, South Kensington; University College, London; University College, Liverpool; Museum of Science and Art, Edinburgh; &c., &c. Lists on application.

HENRY IRVING, The Rowans, HORLEY, SURREY.

MUSEUMS ASSOCIATION.

President :

Sir WILLIAM TURNER, K.C.B., B.Sc., F.R.S., D.C.L., L.L.D.

Treasurer :

Alderman W. H. BRITAIN, J.P., F.R.G.S. (Sheffield).

Hon. General Secretary :

E. HOWARTH, Museum, Sheffield.

The object of the Association shall be the promotion of better and more systematic working of Museums throughout the Kingdom. In order to promote a better knowledge of Museums, the Association shall meet in a different town each succeeding year.

That each Museum contributing not less than one guinea a year be a Member of the Association, and that individuals interested in scientific work be admitted as Associates on payment of ros. 6d. annually.

That each Museum be represented by three delegates, each having one vote. Each Associate to have one vote.

That each Museum belonging to the Association and each Associate receive one copy of the publications of the Association.

That a General Meeting of the Association be held annually, for the transaction of business, the reading of papers, and the discussion of matters relating to Museums.

MUSEUMS ASSOCIATION.

Some of the earlier volumes of the Report are nearly out of print, and Museums requiring complete sets should order them at once. Particulars can be obtained from the Secretary, Museum, Sheffield.

Museums and Teaching.

PROFESSOR E. Ray Lankester's address at the opening of the new wing at the Ipswich Museum, to which we have already alluded, seems to have provoked criticism in more quarters than one. "A Teacher," writing in the February number of the *Popular Science Monthly*, falls foul of him for saying that "a county museum is not a place for children or school-teaching." Considering how much use American schools and school-children make of the local museum, the somewhat severe comments of "A Teacher" are scarcely to be wondered at.

Directors of museums in the United States have indeed much wider ideas as to the place of museums in education than are possessed by some authorities in England. Mr. Frank Collins Baker, head of the museum of the Chicago Academy of Sciences, has an article on "The educational value of natural history museums" in the *Review of Education* (Chicago, November, 1901). Among other subjects in which the museum may aid or supplement the teacher, he mentions geography. "In the Chicago Academy of Sciences," he writes, "the cases of corals are so arranged and labelled as to give a clear idea of the growth of coral reefs. Figures are given shewing the method of building barrier and fringing reefs and atolls, and a large map surmounts the case shewing clearly the geographical distribution of coral reefs throughout the world, together with the principal kinds of reefs. The teacher will see at a glance that coral reefs are confined almost entirely to the belt or zone bounded on the north by the Tropic of Cancer and on the south by the Tropic of Capricorn. It will also be noted that the reefs are more abundant on the eastern sides than on the western sides of the continents, on account of the warm currents of water, as the Gulf Stream and the equatorial currents."

"So also the teaching of physiography, which is geography in a wider sense, may be greatly assisted and simplified by the modern museum. In his geography the child reads about glaciers, rivers, valleys, icebergs, limestone caves, &c., and gathers from the figures and descriptions only a shadowy conception of the things described. In the museum he may see these gigantic natural phenomena illustrated by models, which to him are miniature examples of the objects themselves. Models and relief maps illustrating the formation of islands, peninsulas, coral reefs, mountains, valleys, &c., are also to be found in the museum, and are invaluable aids to the study and teaching of this subject. A single example of this kind of model will suffice to illustrate this point. In the Chicago Academy of Sciences there is a model which illustrates the cutting and tearing-down power of the sea. A high cliff is shewn which faces the open sea; this cliff is cut into thousands of fissures and crevices, and the material cut from this cliff is shewn to be carried around the headland into a sheltered bay, where it is deposited in the form of sand dunes. Near the headland is an island which has been made by the cutting-away of the land between the latter and the mainland. This is but one of the examples in which the museum is a valuable and practical help in the teaching of geography."

After giving examples of the way in which a museum may illustrate the natural resources of a country, the zoological provinces, and modes of manufacture, Mr. Baker reminds us that "the museum is also a bureau of information for the teacher, and its officers and employees are (or should be) always willing and pleased to lend their aid in the solution of any problems which may vex the mind of the teacher or other visitor." A curator who regards his duties in this spirit will increase both the influence and, ultimately, the riches of his museum. *O si sic omnes!*

An Economical Method of Mounting Shells and other Small Objects for Museums.

BY W. H. EDWARDS.

[Paper read at the Edinburgh Conference, 1901.]

IN asking your attention for a few minutes to the following brief notes I feel that an apology is necessary, because it is a paper that will only appeal to at most a few unfortunate curators, who, like myself, have the misfortune to be in charge of a museum where money is a great desideratum, and where one has to face that great difficulty of "making two ends meet." However, I will be as brief as possible, and I trust my more fortunate colleagues will forgive me for wasting so much of their valuable time.

Our conchological collection at Worcester, which is a very extensive one, and by experts said to contain some exceptionally fine specimens, was further enriched a short time ago by a gift of about 250 species and varieties of British shells. The specimens in the old collection, which had been mounted for a number of years, were gummed on thin cards, once white, but which had become much discoloured and soiled by age, and the corners of the cards had become badly curled and warped, giving the collection an untidy appearance; and, in addition to this, I need hardly add that the names did not correspond with the latest list published by the British Conchological Society. I therefore determined to re-mount the entire British series, uniformly with the additions, not on cards, but on wooden tablets, covered with paper of a French-grey colour, and, as far as possible, to bring the nomenclature and classification up-to-date.

I originally intended mounting the whole collection in glass-topped boxes—similar to the fine collection at Owens College, Manchester,—but I soon found the cost quite beyond our very limited income; and space was also a serious consideration, as our available cases were already nearly full. I had previously suggested displaying only the more typical and showy ex-

amples, and placing the smaller species in drawers, but my committee wished me, as far as possible, to exhibit a complete series of the British shells.

It was then that the idea of mounting the smaller and more delicate specimens in tubes occurred to me; and this I now have pleasure in submitting for your criticism. It may not be a new idea, though I do not recollect having noticed it elsewhere; and I am prepared to admit that it certainly is not the best system, but it is at least neat and economical, and, at the same time, the small shells can easily be removed for examination with a lens, etc.

The tablets, which are made by a local joiner, are of best dry, yellow pine, and are as free from knots as possible; they are $\frac{5}{8}$ of an inch thick, and our smallest are 3 in. by 1 $\frac{1}{4}$ in., the unit of width adopted being 3 in., which is uniform with other tablets in the museum, and all other sizes are multiples of that width. Before adopting the paper it was submitted to most severe tests, and was found to keep its colour well, even after twelve months' exposure to a strong light in my office window. We find it a pleasing colour, and one which suits both a dark and a white or light-coloured object, and the one which seemed most suitable for uniform use in the museum.* It is an admirable colour for fossils and mineral specimens. Our tablets are all papered at the museum, and we also rule the marginal lines which you see on the specimens handed round.

For the ruling and labelling I have experimented with several kinds of ink, and, after careful trials, I find nothing to equal that which is sold in small bottles by artists' dealers as "Pelican Liquid Drawing Ink"; it is much better than ordinary Indian ink, is a good, deep black, without gloss, and does not fade. I had previously been using "Ticket Writers' Ink," which is rather glossy, and I found it had a tendency to crack, especially if placed in a sunny place. This "Pelican" ink is made in about sixteen other tints, for colour work, but I have had no experience with any of these.

* Paper obtained from Raithby, Lawrence, and Co., Queen Street, Leicester, at 32/- per ream, in sheets 18 in. by 23 in.

Ltd., **BSTAB.**
1846.

LONDON, E.C.

Series to the British Museum,
Museum, Horniman Museum.

Illustrations, and Samples, on



No. ST3.

"Simplex" Shelf Clip.

For holding specimens from $\frac{1}{2}$ or $\frac{3}{4}$ in.
Especially useful for long narrow
labels.

per doz ; 15/- per Gross.



Glass-Topped Specimen Boxes.

White paper inside and black out-
side. Used at the Geological Museum,

Depth.

by $\frac{1}{2}$ in.	..	18/-	per gross.
by 1 in.	..	21/-	"
by 1 1/2 in.	..	24/-	"
by 2 in.	..	27/-	"
by 2 1/2 in.	..	31/-	"
by 3 in.	..	36/-	"
by 4 in.	..	42/-	"
by 6 in.	..	54/-	"
by 8 in.	..	72/-	"

For other sizes,
prices are quoted on order.

Prices in the following size covered

..	..	24/-	per doz.
..	..	30/-	"
..	..	36/-	"
..	..	42/-	"
..	..	48/-	"
..	..	60/-	"
..	..	72/-	"



**Neat Cardboard Tray for
Specimens.**

Width, and finish as boxes No. 14,
but are $\frac{1}{2}$ in. high.

3 4 5 6

6- 7/6 9/- 10/6 per gross
larger sizes to order

Board for Mounting or Writing

Per doz.

by 19, 6-sheet cardboard,	2/3
by 19, 8-sheet cardboard,	2/6
by 19, 12-sheet cardboard,	3/-
by 19, stout tinted board,	3/6
very card, 24 by 19, thick,	4/6
very card, 24 by 19, medium,	4/-
very card, 24 by 19 thin,	3/6

above sizes at half the prices.

NS, Ltd., ESTAB.
1846.
, LONDON, E.C.
Exhibition or Private Collections.

**BRACKETS,
SIZES.**

Bracket J.

Standard Bars
Quality and Finish.

Sizes are stock'd:—

BRONZED

10	12 inch.
2/3	2/9 each.
21	24 inch.
6/6	8/6 each.

IRON (Warranted).

10	12 inch.
1/6	1/9 each.
21	24 inch.
4/6	5/6 each.

BASES.

earnestly solicited to
sell for many purposes,
impulsory. We quote
FULL VALUE. Packing
condition, carriage paid,

L TAPPED BAR; Brass, Bronzed, 1/- per foot

not less than 4 feet.
rop Doors
NO VALUE, gin. high
reable Trays.

35/- per foot.
30/- "
25/- "
22/6 "



(4.—Useful Cabinet for private
Collectors or Duplicate Specimens.
Light wood covered cloth. brass handles.

15 by 12 by 8 (4 drawers) **16/6**
18 by 15 by 20 (5 drawers), **21/-**
20 by 18 by 12 (6 drawers) **25/-**
34 by 20 by 16 (8 drawers), **30/-**

Ltd., ESTD.
1846.
LONDON, E.C.

Private Collections.

DIMENSIONS.

Total height, 6ft. 3in. (excluding ornamental iron cresting and finials).

Table Height, 2ft. 6in. Depth, 4ft. 6in.

Total height of Show Case (excluding cresting), 5ft. 6in.

Height of upper part of Show Case, 2ft. 1 1/2 in.

Depth of upper part of Show Cases, 14 in.

The lower portion of Show Case measures at its highest 5 1/2 in. and at its lowest 5 in.

Bottom of Case is covered with Claret or Blue coloured Cloth. The under part of Case is fitted with Drawers, three in height and length, according to dimensions of Case. All Sashes are made to the "air-tight" principle and Glazed Plate Glass.

by 4ft. 6in. by 6ft. 3in., 18 Drawers, **£66 10/-**

9ft. by 4ft. 6in. by 6ft. 24 Drawers, **£78 10/-**

12ft. by 4ft. 6in. by 6ft. 30 Drawers, **£95**

If delivered outside London, an extra charge is made for packing, according to size, varying from £3 upwards.



Many Plate-Glass Case.

round and top, carved pedestal with one full-sized plate-glass sash and brackets. Splendid

B Quality, A Quality, without pedestal or fittings.

£15 5 0	£9 17 6
18 10 0	12 15 0
21 15 0	15 10 0
25 0 0	18 10 0

above, 37/6, 57/6 & 72/6 extra, made for all purposes—any plates and drawings supplied on application.

BOTANICAL SPECIMENS

FOR MUSEUMS.

CONES OF RARE CONIFERS.
INFLORESCENCES OF CYCADS,
CYCAS, ZAMIA, MACROZAMIA,
CERATUZAMIA, STANGERIA, ENCEPHALARTOS, &c.,
MALE AND FEMALE.

SECTIONS OF BRITISH AND OTHER TIMBERS.
SPECIMENS FROM THE TROPICS.
SPECIMENS IN ALCOHOL and other media.

Models of British Fungi.

ECOLOGICAL SPECIMENS.

ANATOMICAL SPECIMENS.

HERBARIUM SPECIMENS.

Insectivorous and Parasitic Plants.
SETS ILLUSTRATING ECONOMIC PRODUCTS.
PATHOLOGICAL SPECIMENS.
FOR PARTICULARS SEND FOR SPECIAL PRICE LIST.

J. BACKHOUSE & SON, LIMITED,

THE NURSERIES (Scientific Department.)

Telegrams: "BACKHOUSE, YORK
'Scientific.'"

YORK.

W. D. WEBSTER,

Home Court, 24, Palace Road, Streatham Hill,
. . . LONDON. . .

COLLECTOR OF ETHNOGRAPHICAL SPECIMENS,
EUROPEAN AND EASTERN ARMS AND ARMOUR,
PREHISTORIC AND OTHER ANTIQUITIES.
Telegraphic Address : "ETHNICALY, LONDON."

ILLUSTRATED CATALOGUE published every three months. Each copy contains 20 plates reproduced from photographs, and is subscribed to by all the principal Museums in the world. Subscription 10/- per year, post free, payable in advance.

A few bound Catalogues can still be obtained at the following prices :—

Vol. 1 contains Catalogues	Nos. 1 to 10	- - -	30/-
Vol. 2 ditto	Nos. 11 to 17	- - -	20/-
Vol. 3 ditto	Nos. 18 to 23	- - -	25/-
Vol. 4 ditto	Nos. 24 to 27	- - -	25/-

The Collection consists of over 10,000 specimens from all parts of the world, any of which will be sent on approval on carriage being paid.

SPECIMENS BOUGHT OR EXCHANGED

EVERY MUSEUM SHOULD HAVE

A HEALTH SECTION

BECAUSE IT IS IMPORTANT, PRACTICAL AND INTERESTING
IF DESIGNED ON POPULAR AND PROPER LINES.

Advice and Help on this Subject can be obtained by application to

THE HYGIENIC REFERENDUM,
FERRESTONE ROAD, HORNSEY, N.

A. S. HUTCHINSON, ———

Naturalist, Furrier and Taxidermist to . . .

Manchester, Sheffield, Derby and Oldham Museums.

Undertakes all kinds of plain and artistic taxidermy. British Birds and Animals supplied at the usual prices. Private and public Museum Collections attended to and kept in good condition at a reasonable cost per annum. Work executed in any part of the kingdom.

A. S. HUTCHINSON, 85, London Road, DERBY.

The principles of good and bad drainage, good and bad ventilation of drains, good and bad disconnection, and all questions of alignment, gradient, size, materials and support must be carefully demonstrated.

The details of plumbing and all wastes, sinks, bath fittings, and surface and rain water drainage must be included; but the writer feels sure that this section will have the greatest attention, and consequently leaves out much detail which cannot fail to suggest itself, and if it does not plenty of sources will be available for obtaining the fullest particulars in every district.

SECTION 5.—REFUSE DISPOSAL.

In this section, which is partly domestic and partly municipal, specimens of dust receptacles, orderly bins, and manure receptacles for mews will be shown, also a plan and section of a good fixed midden. The dangers from fixed dust bins, dust shoots, and sunken middens must be shown, and a good bold drawing, which the surveyor of any town will supply, of a good form of refuse destructor should be prominently displayed. Crematoriums can be introduced in this section and encouragement should be given to this mode of disposal of the dead. Methods of house refuse disposal other than the above can be shown by illustrations, such as barging to sea and sorting, and the merits and demerits of each system shown.

In this section all systems of sewage disposal must be illustrated, and these form always an attractive exhibit. Some of the methods can be shown as working models (to be used with clean water only), and the assistance of the local surveyor should be obtained to advise and probably to procure their models.

Some of the most elaborate and most ingenious apparatus can be found in this section and, if carefully arranged, it should be the most attractive.

The Stone-Age Gallery, British Museum.

[REPRINTED FROM *The Standard*, OF MARCH 3.]

THIS gallery, which has been erected in the pre-historic room, contains an admirable series of exhibits, illustrating the tools and weapons of man prior to his acquaintance with the use of metals. The general plan of arrangement has been to present such a series that the visitor who knows broadly that there was a stone age, divided into two main periods, may see how these tools and weapons were made and fashioned note the evolution of the finer from the ruder forms, and gain some idea of how our ancestors lived by the chase and rose from that stage to the pastoral life. Affixed to the wall near the stairs, by which the gallery is reached, is a map of England and Wales, showing the principal sites where remains of the stone age have been found. These lie south of a line drawn from the Wash to the Bristol Channel, and are marked by white-headed pins, while black-headed pins show the sites of caves from which traces of the presence of man have been recovered.

From this point the gallery is entered by a flight of spiral stairs, and the exhibits begin with the oldest, or palæolithic, period, when, as Lord Avebury puts it, "Man shared the possession of Europe (with which Britain was then connected) with the mammoth, the cave bear, and the woolly-haired rhinoceros, and other extinct animals." A diagrammatic section is shown of a brickfield near Luton, the site of old flint workings, with the relics of the handiwork of Palæolithic man. Flakes which have been chipped off have been replaced on the core, or rough block of flint, to illustrate the mode in which primitive man obtained the raw material for his tools and weapons. For the flakes bear the same relation to those tools that the cutler's rough plate of metal bears to the finished knife blade. This was in the palæolithic period of the stone age. Even in these early times there was a craving for ornament, as is shown by rude beads, with which are some organic remains, probably of the ligament on which they were

strung. Then chipped flints—the raw material dressed—are shown; together with stone implements bearing traces of a second and later chipping—perhaps a process of repair; or to adapt them to some use other than that for which they were first intended. The reason why early relics are found at a higher level than later ones is made clear by a section of a river valley, based on geological evidence, showing the shrinkage in the volume of water and the successive deposition of gravel. One gets an idea of what the palæolithic floor was like, for a portion uncovered at Lower Clapton is exhibited. Honour is done, in the form of a bronze medallion portrait, to J. Boucher de Perthes, who was the first to draw attention to the importance of the remains of the drift of the Somme Valley in 1834. Here one may see what is probably the first recorded instance of the discovery of primeval human workmanship in connection with the remains of extinct animals—a celt found towards the end of the seventeenth century in Gray's-inn-lane. Many eoliths from the plateau gravels near Sevenoaks, by some believed to be of the tertiary period, are shown, followed by implements of the St. Acheul type, and others from Le Moustier, in which part of the crust of the flint is left, presumably to afford a good grip. The cave-dwellers mark the close of this period, when the mammoth was becoming extinct, and there was a great development of the northern fauna. There are many excellent examples of the art of this race—drawings and carvings which evince high capacity and power of execution. The workmanship of their tools and weapons shows considerable advance, and side by side with these relics is placed for comparison Eskimo work of the present day.

The kitchen-middens of Scandinavia are represented by a large piece from the north-east coast of Jutland, consisting of shells (oyster, mussel, cockle, and periwinkle), broken bones, pieces of pottery, and a few old tools. Plans of the old flint workings at Grimes' Graves, Norfolk, and Cissbury, in Sussex, show that the pits were sunk and galleries driven with considerable skill. From the graves 79 picks made of the antlers of the red deer have been recovered; the beam served as a handle, the brow tine corresponded to the iron of the modern

tool, and the rest of the tines were burned or chipped away. One of these picks bears the thumb mark of the man who used it. Some lumps of chalk, deeply hollowed out, were also found in the workings, and these, it is believed, served for lamps. In the remains from a tarn near St. Bees, Cumberland, one sees further advance in the shape of an axe-head of carefully-ground stone fixed in a handle of beechwood, clubs, canoe paddles, and some wooden implements the use of which is not satisfactorily determined. From this point the cases are devoted to neolithic implements from the Continent of Europe, in some of which the workmanship is exceedingly good. In this period not only were tools and weapons known to the men of the previous age ground and polished, but new ones were invented to meet new wants. Palæolithic man lived by hunting; but neolithic man supplemented the spoils of the chase by some rude agriculture, had domesticated a few animals, and had learnt to weave and to make coarse pottery. In the cases at the end of the gallery are stone tools and weapons from Africa, showing general correspondence to European relics, though their value is lessened to the anthropologist from the absence of geological or palæontological evidence as to their age. The last exhibit is a series of stone implements, still in use among savage tribes from Alaska to Australia. In one instance—an axe from Dahomey—the use is purely ceremonial, and the weapon is a symbol of chieftainship. The floor space below the gallery is used for Asiatic stone implements, and objects of the bronze age in Europe. Numerous parallels will be found in the ethnographical gallery, which should be visited in order to study perishable objects still in use among races in a stage of culture corresponding more or less closely to that of the pre-historic races by whom the objects in this gallery were made. The Stone-Age Gallery will, perhaps, never be a "popular" show; but it is visited by a large number of people interested in the subject, and the number of those so interested is on the increase. The exhibition is a valuable addition to the ethnographical department of the museum, and one for which all students will be grateful to the keeper (Mr. C. H. Read) and his staff.

Transvaal State Museum.

THE Administration has granted the necessary sum of money, about £8000, to complete the new buildings that were being erected for the State Museum when the war broke out. The museum dates back to about 1891, when, in response to a suggestion emanating from a natural history society long since defunct, Dr. Leyds took the matter up, and gave it his very influential and whole-hearted support. There was at that time a room in the government buildings in which was stored a number of old pieces of ordnance, old elephant guns, the Bible and psalm-book of Piet Retief, and other relics of the voortrekkers. These became the nucleus of the State collection, and a curatorium, or board of managers, was appointed to organize and control a State Museum. The superintendent-general of education was, *ex-officio*, chairman. The other members included a German, Mr. Klimke, the State mining engineer, two Dutch doctors, and one Englishman, all of them men of some scientific acquirement, and well fitted for the task. The Volksraad made a liberal grant in support of the new institution, a large hall in the market buildings suitable for the purpose was hired, and soon the collection began to take shape. At first the progress of the institution was beset with many difficulties, owing to the scarcity of men possessing qualifications for and an interest in such work. At last an expedition was fitted up, and sent out into the low country and other parts of South Africa, in charge of a very enthusiastic naturalist, Mr. Paul Krantz, now a prisoner of war in St. Helena. Mr. Krantz was very successful, and returned with a very fine collection of skins, properly prepared for setting up, and a very remarkable entomological collection. Other collections of South African birds, insects, and plants were purchased from time to time, and very soon the museum in the market buildings became well worthy of a visit. Circulars were sent out to field cornets, native commissioners, and other people in authority, urging them to co-operate with the curatorium in acquiring, by purchase if necessary, from the burghers, articles of historical interest, and from the natives specimens of their art and industry. About five years

ago the time arrived when it was found absolutely necessary to place the museum in charge of a thoroughly qualified and well paid director. The Government was approached on the subject, and readily agreed to increase the museum grant for that purpose. The choice of the curatorium fell upon Dr. Gunning, a Hollander medico, a man of wide scientific knowledge, and one whose ideas and sympathies had been liberalised by long residence in the Cape Colony. Latterly the Market Hall became much too small, and the pressure was temporarily relieved by the transference of the mineralogical collection to the department of the State geologist, Dr. Molengraf, in the State Gymnasium. This collection was acquired from the well-known mineralogical institute in Freiberg, Germany, at a cost of over £1,500. On more than one occasion the President and the Volksraad visited and inspected the museum, on every occasion expressing their entire satisfaction with what they saw. It is entirely to the credit of the executive and the Volksraad that they gave practical effect to their approval by steadily increasing the annual grant to the museum until in 1898 it reached the handsome sum of £6,000. It is entirely to the credit of Dr. Leyds that he used his great influence with the Autocrat and the "Landsvaders" in thus promoting science in the Transvaal. And lastly, and not least of all, it is to the eternal credit of Dr. Mansvelt and the members of the curatorium that all this money was well and wisely spent without so much as a suspicion attaching to them of having derived any personal advantage therefrom. On the occupation of Pretoria the museum was taken over by the British authorities as a going concern. Dr. Gunning and the members of the scientific staff were retained in their positions, and the work went on without interruption. A new curatorium has been appointed, which is presided over by Mr. G. V. Fiddes, Secretary of State, who has efficiently taken the place of Dr. Leyds in securing for it the hearty support of the new administration, nay more, the new curatorium has been so much encouraged both by Government and by public support, that what was heretofore merely a department of the natural history collection has blossomed out into a most interesting zoological garden, which is fast becoming a favourite public resort.

Publications.

THE NATION'S PICTURES: a selection from the finest modern pictures in the public picture galleries of Great Britain, reproduced in colour; in parts, 7d. each, net; Cassell and Co., Limited.

It is natural that with the extension of public picture galleries, where all may freely enjoy the privilege of inspecting the greatest productions of the art world, there should grow up a general desire to possess the best reproductions attainable of those pictures which variously appeal to the individual taste. Only the very wealthy can hope to possess original pictures of great value; and, from the purely ethical point of view, it might be argued that individual proprietorship in works of art is antagonistic to their true purpose; for the lives and works of great men are for the benefit of the race, and not alone for that of the individual. Public art galleries are the best for carrying out this principle, while the publication of such works as that now under notice enable the individual to obtain such copies of pictures as will furnish him with a true remembrance of their artistic merit. Each part contains four pictures, slightly attached to a neutral-tinted rough mount, so that they can easily be detached for framing, if desired. The colours represent very closely the true tones of the original works, each picture being most carefully printed with a soft delicacy that displays commendable skill. When completed, this work will furnish the curator of an art gallery with a guiding list to all the great pictures belonging to the public, each of which can be readily identified with any picture that has once been seen. It is one of the most successful and best series of reproductions that has ever been issued, the low price at which it is published making it accessible to everybody. There is a page of text with each picture, briefly describing the incident of it, where it requires elucidation, without entering into any bewildering criticism.

LES ARTS: Revue mensuelle des musées, collections, expositions, published by Manzi, Joyant, and Co. (successors to Goupil and Co.). Price 2 fr. net.

This new illustrated monthly review of art promises to cover a field that has not previously been attempted in such

completeness by any other publication, and the first part, which has just been issued, enriched with a large number of excellent illustrations, gives a graphic realisation of the art treasures dealt with. Not only are the pictorial and plastic arts to be dealt with, but objects of industrial art, whether in private or public collections, will be illustrated and described. Already there are many publications which deal with public collections, but there are few which even attempt to give particulars of private ones, and the present publication is likely to be specially useful to the student and curator in this respect. In their circular the publishers say :—" Besides being a chronicle of the art movements of the day, one of its chief objects will be the reproduction and description of many of the unpublished and comparatively unknown works of value and beauty to be found so plentifully in the private collections of all countries." In the first part there is a well illustrated article on the collection of Mr. Alfred de Rothschild, dealing with his French and English pictures. Some of the contents of the Louvre, other than pictures, are figured and described, and there is an article on "Le Mobilier Français du 18th Siècle" in foreign collections. The origins of modern art are illustrated by the works of Eugène Delacroix and J. C. Cazin. The renaissance of the decorative arts comes in for treatment, and there is a fine reproduction of the Raphael Madonna, for which Mr. Pierpoint Morgan paid 2,500,000 francs. A chronicle of art sales completes the number. *Les Arts*, of which there will be twelve parts each year, can be obtained from Messrs. Goupil and Co., 25, Bedford Street, Strand, London.

CATALOGUE OF THE ROMAN INSCRIBED AND SCULPTURED STONES IN THE GROSVENOR MUSEUM, CHESTER, BY F. HAVERFIELD, M.A., F.S.A., with one hundred illustrations. Chester: Printed for the Chester and North Wales Archæological and Historic Society.

Historic Chester is naturally rich in antiquities, being itself strikingly old-world, even in its present-day features, with an ancient air about it that makes it easy to travel back in imagination to the days when the Roman legions occupied its walls and fortresses, and paraded its streets. But in the march of "progress" inevitable changes take place, which often

destroy old landmarks of ancient history to make room for modern ways. Fortunately in Chester there is no shade of vandalism in its municipal spirit, so that all "finds" of historic interest are reverently preserved, and thus it comes about that the museum of the city is the home of its past. The present catalogue is a practical instance of the richness and value of the collections, this section of Roman inscribed and sculptured stones being treated in an exhaustive manner by Mr. Haverfield. It contains a record of more than two hundred examples found in Chester, or its suburbs, of which only one-sixth were known previously to 1887. Great credit is due to the city surveyor of Chester for the great care he exercises in preserving all interesting remains which he comes across in the excavations carried on in connection with improvement in the city. The illustrations shew very clearly the inscriptions and figures on the stones, each of which is described and its origin stated. The text of the inscription is given in italics, to which is appended a fairly close translation, with such comments as seem desirable for its full elucidation.

HANDBOOK OF THE MARINE STATION, KEPPEL PIER, MILLPORT, compiled by the Honorary Secretary. Glasgow: Printed for the Marine Biological Association of the West of Scotland. 1901.

One of the most delightful trips of the British Association, during the course of its meeting in Glasgow, was the visit paid to the Scottish Marine Station at Millport, on the Great Cumbrae. The secretary to the West of Scotland Marine Biological Association, Mr. J. A. Todd, had evidently made up his mind that the party should not only have an opportunity of seeing the station and the nature of the work carried on, but that they should have a thoroughly enjoyable day, lacking nothing that hospitable foresight could command, or that genial supervision could arrange. And he had his reward in the thorough satisfaction and enjoyment of every one present. This little book gives an account of the history of the station, its present position and equipment. The station consists of a substantial building of two storeys, the upper one being devoted to the display of the collections of the late Dr. David Robertson, which forms a good museum of marine biology, and the lower floor contains the laboratories for research work and stor-

age. There is also a residence for the curator. In addition, the association possesses an excellent steam yacht, specially built for dredging and exploring the Clyde sea area. The members of the Biological Association have special privileges with regard to the use of the steamer and laboratories, though others may have the use of working tables on the payment of certain moderate fees. In addition to the particulars of the station, the book contains an excellent paper on the "Physical conditions of the Clyde sea area." The station seems to be in a flourishing condition, well supported financially, equipped in a very complete manner, and ought to produce some excellent work.

Dr. E. B. Tylor, Reader in Anthropology to the University, is retiring from the post of keeper of the Oxford University Museum.

General Notes.

AT HOME.

MUSEUMS ASSOCIATION.—The annual meeting will be held this year at Bradford, in the week beginning July 14.

BRITISH MUSEUM.—The authorities at the British Museum, Bloomsbury, have just bought the famous collection of drawings of the well-known artist, John Sell Cotman. They were the property of Mr. Reeves, the curator of the Castle Museum at Norwich. Until now, none of the artist's best work has been seen in any national collection.

BRITISH MUSEUM HERBARIUM.—The proposal to transfer the botanical collections in the British Museum to Kew, as recommended in the report of the Botanical Work Departmental Committee, is not likely to be proceeded with. To give effect to it would require an act of parliament giving powers to the Government to remove the collections, and in face of the opposition which any legislation on the matter would certainly encounter, as revealed in much of the evidence given before the committee, the decision to take no further action in regard to the question would seem to be the best under the circumstances. It will be remembered that Lord Avebury and Mr. Horace Seymour, both members of the committee, dissented from the report of the majority as to the transfer of the national herbarium to Kew.

DUBLIN MUSEUM.—An interesting discovery has been made near Tuam, where some labourers a few days ago, while turf-cutting in a bog, came upon an ancient Irish corrack, or canoe, several feet below the surface, and in a fairly good state of preservation. The boat measured 52ft. in length. It has been decided to place it in the museum at Dublin.

ROTHSCHILD COLLECTION, BRITISH MUSEUM.—The catalogue of the works of art bequeathed to the British Museum by Baron Ferdinand de Rothschild at his death in 1898 should be very interesting to all collectors. It has been compiled by Mr. Charles Hercules Read, and has been sumptuously printed and illustrated by the trustees of the museum. Baron Ferdinand de Rothschild does not appear to have begun to make his collection until late in life, and he was therefore unable, despite his wealth, to acquire a set of objects that would completely express his tastes. He had not the time in which to dispose of the things that were not absolutely of the best, and the catalogue suggests that there are many objects he wanted to acquire, but could not discover. Still, the collection contains some examples

of the very highest character, and scarcely an object which does not reflect credit on the man who had the sense to buy it when it was in the market. Several branches of applied art are not represented at all, and it may be supposed that the Baron was not greatly attracted by Oriental work, since the majority of his specimens are European. The man who collects has a strong personal attachment to his acquisitions, and one of his saddest thoughts is apt to be the reflection that they will some day be scattered again. This is probably the reason why Baron de Rothschild made it a condition of his bequest that it should for all time be exhibited in a special room and nothing else be introduced—a condition that in most cases only serves to hamper the proper display of a collection which might be much more valuable if classed with other related objects in the museum.

MUSEUMS AS SHOP WINDOWS.—It is satisfactory to notice that the paragraph on page 203, condemning the practice of allowing photographs from professional photographers to be exhibited for sale in museums, has excited the ire of a photographic journal, which has become almost incoherently hysterical in its wrath. No stronger testimony to the expediency of our remarks could be given. As evidence of the mental confusion of the writer in the *Amateur Photographer*, he speaks of the value of the photographs lent by amateur photographers, which, of course, can have nothing to do with our remarks; for when a person offers photographs publicly for sale, he or she, quite obviously, ceases to be an amateur. In a public museum, maintained out of the rates, if one class of ratepayers are to be allowed to use it for the sale of their wares, surely the same right would belong to all other ratepayers in equal degree. It was to the sale of photographs by outside people that our remarks were directed, and not to the work of *bona-fide* amateurs which deserves encouragement.

ONSLOW FORD'S CASTS.—The will of the late Mr. Onslow Ford, R.A., directs that the president and council of the Royal Academy should have the option of selection from the plaster casts in his studio, subject to the rights of reproduction of persons interested; and that the testator's children should then each have the choice of one plaster cast, and that the remainder should be offered to such institution or institutions as his son Wolfram may choose. The testator ordered that his portrait busts of modern artists should be sold.

COUNT PLUNKETT'S LECTURES.—An address was recently given at the National Museum, Dublin, by Count Plunkett on the life work of the great Florentine sculptor, Donatello, many specimens of whose sculpture are to be found in the museum.

The Count's knowledge of the art of the Renaissance period naturally drew a considerable audience. Tracing the history of Donatello, who was born in Florence towards the close of the fourteenth century, he described how Donatello at first engaged in goldsmith work, and, leaving his native city for Rome, spent many years working at his art in the Eternal City. Later on Padua was visited, whence he returned to his native Florence after an absence of fifteen years. Here he worked for the remainder of his life, producing works which will live for all time as specimens of the art of which he was so great a master. A fine reproduction of his work is the choir gallery of the Duomo, to be seen at the museum, in which there is a splendid panel in bas relief of children at play. This work was fully explained by Count Plunkett, who pointed out that there were hundreds of followers of Donatello, but none who reached the same high level in art.

BRADFORD ART GALLERY.—The spring exhibition at Bradford Art Gallery was opened at the beginning of March, in the presence of a large company of ladies and gentlemen, by the Mayor (Mr. W. C. Lupton). In explaining the efforts which the committee had taken to make the display as attractive and successful as in previous years, the chairman (Ald. J. S. Toothill) mentioned that the gallery was visited during the past year by 400,000 persons, of whom 150,000 patronised the last spring exhibition. There was one exhibit in the present collection, said Mr. Toothill, that was of mournful interest to the committee, and that was the work of the late Mr. Onslow Ford. By his death England had lost a great artist, and the Bradford Art Gallery one of its best and most devoted friends.

SOANE'S MUSEUM.—From the first Tuesday in March that interesting but little known museum which Sir John Soane established at 13, Lincoln's Inn Fields, London, will be opened for the season until the last Friday in August. It is a remarkable collection, not particularly large, though everything has some historic story. The house was the residence of the famous architect and academician, and it remains in exactly the same state as when Sir John Soane died there in 1837, even the carpets and hangings being the same. It abounds in ancient works of art and curios of a far-off time, among the latter being a beautiful alabaster sarcophagus of Seti I. of the 19th dynasty, who reigned over Egypt 1350 B.C. Even the pictures on the walls, among them being fine examples of Hogarth and Turner, have quaint stories associated with them, and have consequently not only an artistic but a personal interest attached to them. Soane's Museum is open to the public on the four middle days of the week.

MODERN ART FURNITURE.—The collection of art furniture which was purchased by Mr. Geo. Donaldson, from the Paris Exhibition, to illustrate modern design, and presented by him to the Victoria and Albert Museum, is now exhibited on loan in the Science and Art Museum, Dublin. It has previously been exhibited in Birmingham, and will probably be available for exhibition in other towns which possess the necessary space and desire to display it. Roughly catalogued the exhibits are as follows :—

FURNITURE.—French : E. Galle, of Nancy—Tea table, fire screen, work table. E. Bâgues—Writing table, chair, stool, armchair with metal mounts. S. Bing, Paris—Table, chair with cut and embossed leather, &c. L. Majorelle—Two cabinets with pictorial illustrations by inlay of woods ornamented with metal work, tea table, trays, &c. Pérol Freres—Bedroom suite, bed, commode, chest of drawers decorated with inlay and colours.

German : J. Graf and Spindler—Panelling and settle, the grain and layers of wood used to form the picture.

Hungarian : E. Farago—Two cabinets, table, chair, with art and applied embroidery.

TAPESTRY.—E. Grasset.

CASES.—I. : Glass by Wittwe, of Klostermühle ; W. Zsolnay : Tiffany (New York). II. : Glass by E. Gallé, of Nancy ; pottery by M. Langer (Karlsruhe). III. : Modern jewellery, lock-plates, handles, &c., by Beck, Charpentier, Erikson, &c.

CHILDREN'S ESSAY COMPETITION, PERTHSHIRE MUSEUM.—The distribution of prizes to the successful competitors in the fourth annual competition took place on Saturday, 15th Feb. The subject last year was "The Trees of Perthshire," the competition being open to all boys and girls attending any school in the city or county of Perth. In the Perthshire museum all the native trees are exhibited, specimens being shown of the wood in longitudinal and cross sections, bark, foliage, flower, and fruit : also photographs illustrating the summer and winter condition of the tree. To these are added, temporarily, six of the more important introduced forms, namely, lime, sycamore, beech, horse-chestnut, spruce, and larch. The circulars issued to the children at the beginning of the session recommended that from the nineteen native and six introduced trees, not more than twelve should be selected. Of these, the essayists were told to describe any facts connected with their natural history, observed or learned ; such as their mode of growth, where they grow best, the character of their leaves, flowers, fruits, bark, etc., and the various ways in which they were useful to man. They were also recommended to collect leaves of the trees described, and to make sketches to show any special feature. These essay competitions have done much to encourage children to visit the museum, and to take an intelligent interest in the exhibits ; for not only do they come with their teacher in school hours,

but in their own time also. The prizes were distributed by Sir Robert Pullar. Short, encouraging addresses were given by the Lord Provost, who occupied the chair, by Sir Robert Pullar, Mr. Smith, H.M. inspector of schools for the county, and by Lord Mansfield. The president, Mr. Henry Coates, announced that the next competition would be on the "Insects of Perthshire." The number of essays sent in for the first competition in 1898 was 45, next year there were 70, and in the following year 81, while last year the number had increased to 118.

STONEHENGE.—The charities and records committee of the Wilts county council have reported to the council in favour of a recommendation to the commissioners of the Treasury that negotiations with Sir Edmund Antrobus be initiated or renewed with a view to the acquisition of Stonehenge as a national monument, and that the Treasury be further informed that after such acquisition the Wilts county council would be willing to undertake the guardianship of the monument.

BRISTOL MUNIFICENCE.—Sir William Henry Wills has made another generous gift to Bristol. Eighteen months ago he made an offer to the city to erect a municipal art gallery, the estimated cost of which was £10,000. Subsequently there was associated with the scheme an enlargement of the civic museum, which is much overcrowded. The total cost was £30,000, and Sir William has now undertaken to bear the whole expense.

PRE-HISTORIC AND ROMAN MANCHESTER.—Professor Boyd Dawkins has given three museum lectures at the Owens College on the evolution of Manchester. In these he dealt with the physiography of Manchester, and also treated of its condition in pre-historic and Roman times. He introduced the subject with a sketch of life in Europe in the neolithic age, and described the small, dark, Iberic people of that period, who introduced arts, which included spinning and weaving, into Lancashire. Although none of the characteristic polished stone axes of this period had been found in Manchester, many had been found in different parts of Lancashire, showing that these people were living in this country at the time. Professor Dawkins went on to describe the pre-historic bronze and iron ages, which succeeded the neolithic. It was difficult if not impossible to suppose, he said, that so prominent a hill as that which was now occupied by the Chetham College and the cathedral should not have been settled upon in the bronze age, but he confessed that in the area of Manchester, so far as he knew, no bronze axes had been discovered. But when we came to the succeeding period the evidence left no doubt in his

mind that the foundation of Manchester went back to the pre-historic iron age, when it became a centre of population. He showed plans and maps descriptive of the Roman Mancunium, the site of which was the present Castlefield, Deansgate, and the date of which was founded mainly on the evidence of coins which had been found there, the earliest going back to the year 68 A.D. The Roman altar found there referred to the sixth legion, which came into this country in 116 A.D. Incidentally Professor Dawkins mentioned that in the mural painting in the Manchester Town Hall representing the building of Mancunium there was an inscription reproduced which represented the sixth legion as being then in Manchester, whereas it was clear that Roman Manchester was built some 31 years before. He showed illustrations of the samian ware and of bronze buttons which were found on the sight of Roman Manchester. It was evident that from the year 83 A.D. down to about the beginning of the fourth century the Romans were in occupation here. The destruction of Roman Manchester by the barbaric invaders, he thought, took place about the close of the fourth and the beginning of the fifth century. Nevertheless he was bound to say that the Roman civilisation might have lasted here much longer, as it was known to have done in the case of Carlisle. He acknowledged the importance of the work done by Mr. Roeder, who might be called the Roman historian of Manchester.

HISTORICAL SERIES OF WATER-COLOURS.—The three collections of water-colour drawings which have been arranged by the Board of Education for circulation amongst the art museums of the kingdom, to illustrate the history of that typical branch of English art, have become familiar through their exhibition in various towns, and their great value is fully recognised. One effect will probably be to stimulate other art museums to form a permanent series on their own account, and in this respect Liverpool appears to be leading the way, for, as an outcome of a gift of some water-colours to the Walker Art Gallery, the committee have been asked to augment this gift by procuring further additions to give it historical sequence and value.

PROPOSED "NATURE STUDY" EXHIBITION.—The following is an extract from a letter which appeared in the *Times*:—For several years past the tide of the best educational thought has set strongly in the direction of the study of nature in schools of every grade. There is no subject which awakens keener interest or more fully develops the powers of observation and reflection. The Board of Education, the majority of county councils and many school authorities have done much to encourage this movement, which is simultaneous in every

country, but although excellent work may be seen in isolated instances, there is no general agreement as to the best mode of instruction. With the view, therefore, of collating individual experience and rendering the methods of each available for all, an association has been formed to promote in London, about the end of July, a "Nature Study" exhibition, of which the Right Hon. Sir W. Hart Dyke, M.P., the Right Hon. Sir John Hibbert, K.C.B., and Sir George W. Kekewich, K.C.B., have already consented to be patrons. It is suggested that the exhibition should be open to urban and rural elementary day schools, continuation schools, higher grade schools (boys and girls), Home Office schools, secondary schools (boys and girls), and other institutions and colleges; and that prizes or certificates should be offered in each class for: (1) The best collection of common dried plants, injurious insects, &c., apparatus for class lessons, drawings made in class of natural objects, home-made maps with a school as centre, showing features of interest within a radius of two or three miles of the school, note-books, natural history calendars, plans of gardens, photographs, models in clay or plasticine of natural objects, plants grown in boxes and pots, and rustic carpentry. Schools would not be restricted to these exhibits, nor would they be required to send all of them. Teachers would use their own discretion in sending what they believe will most fully illustrate their courses in "nature study." Specimens of rare plants would not be asked for, and the uprooting of any plant would be especially forbidden. (2) The best individual exhibit of one pupil's work. (3) The best scheme of instruction and descriptive account of work, methods, &c.

CORONATION ART.—A small but interesting collection of prints and drawings illustrative of former Coronation ceremonies and processions in England has just been arranged in the picture galleries of the Victoria and Albert Museum at South Kensington. Among the more notable exhibits are a fine copy of the great print, in twenty sheets, by Wenceslaus Holler, of "The Cavalcade of His Majesties passing through the City of London towards his Coronation, Monday, the 22 of April, 1661"; Sir R. Strange's engraving of "Charles I. in his Robes," after Van Dyck; a long roll of the "Coronation Procession of George IV., 19 July, 1821," in coloured aquatint. An interesting feature in this is that the procession is headed by "Miss Fellowes, the King's herbwoman, strewing flowers, and attended by six maids of the herbwoman, also strewing flowers." One wonders if this appointment has been allowed to lapse. There are likewise a valuable set of views in water-colour by Charles Wild of various scenes of the Coronation of George IV., and the original drawings by the two Stephanoffs

—James and Francis Philip—for the magnificent work on the same subject compiled by command of the King by Sir George Nayler, Garter King of Arms. The engraving by Samuel Cousins, A.R.A., of "The Queen (Victoria) receiving the Holy Sacrament at her Coronation," after C. R. Leslie, R.A., is also exhibited, together with the study in oils, of the kneeling figure of her late Majesty made by Leslie on the same occasion. Near by is the large engraving of "The Coronation of Queen Victoria," by H. T. Ryall, after Sir George Hayter. Of considerable interest is a set of the Crowns of George II. made by Thomas Pestell, George III. by Francis Grose, and George IV. by Philip Liebart, in each case with full descriptions of the stones and setting, the first two being engravings and the third the original drawing.

THE "POPULARITY" OF ART.—Hull is not the only city which has to resort to extraneous efforts to induce people to visit its art exhibition. In Leeds there has been organised a small army of "patronesses" who undertake to encourage the sale of season tickets, to be present at the opening soiree, to visit the spring exhibition at least twice, and to be present at one or two of the Wednesday afternoons during the exhibition, when social gatherings are encouraged by tea and music.

WHITECHAPEL ART GALLERY.—The first report of the Whitechapel Art Gallery, just issued, tells how the whole sum of nearly £16,000 for the building has been raised. The exhibitions—one of pictures at Easter, one illustrating Chinese life and art in the summer, and one of pictures of Scottish artists at Christmas—were each open for about six weeks, and drew nearly half a million visitors. The trustees express their gratification that they have been able to open to the people of East London a larger world than that in which they usually work, to draw them to a pleasure recreating to their minds, and to stir in them a human curiosity. The trustees appeal for donations to enable them to carry on their exhibitions, the cost of which falls on voluntary offerings.

PHOTOGRAPHIC SURVEY.—The National Photographic Record Association continues to make steady progress with the photographic survey of the United Kingdom, which it initiated four years ago. At a meeting of the council Mr. Scammel, the secretary, reported the receipt of 369 photographs since the last meeting in July, 1901. A large proportion of these pictures came from Scotland—Banffshire, Argyllshire, and Aberdeenshire furnished a great deal of the material for fine photographs of the many old castles, picturesque ruins, and "bits" of scenery to be found in those shires. Sir Benjamin Stone, the energetic president of the association,

contributed some, with interesting photographs of the king's home at Sandringham, the premier's magnificent residence at Hatfield, Houghton Hall (Sir Robert Walpole's old seat in Norfolk), and other palatial country homes of England. Mr. Scammel's photographs included several views of houses in London and the suburbs, of special interest from their association with literary and other celebrities of the past. The collection will in due course be sent to the British Museum, to be added to the large series of similar photographic records preserved in the department of prints and drawings.

THE ROMANCE OF THE PORTLAND VASE.—Mr. John Northwood, whose name is celebrated in the annals of the glass trade as the modern discoverer of the long lost art of the cameo decoration of glass, died at The Cedars, Wallheath, at the age of 63 years. His reproduction of the Portland vase was a unique event in the glass trade, and excited the utmost interest among connoisseurs generally when it was announced, proving as it did that the cameo vases of the glass makers of classical days could at least again be made. Of the few cameo works in glass which have come down to the moderns, the Portland vase is the most famous. It is a cinerary vase, and is supposed to have contained the ashes of a member of the imperial family of Alexander Severus. It was found in a marble sarcophagus, near Rome, in the early part of the seventeenth century, and for a time rested in the Barberini Palace at Rome. It came at last into the possession of the Portlands—hence its modern name of the Portland vase—who in 1810 placed it in the British Museum. Here, in 1845, it was smashed by a lunatic, but it was so skilfully fixed together again that it is still “a thing of beauty and a joy for ever.” The vase represents, or is supposed to represent, Thetis consenting to be the bride of Peleus in the presence of Poseidon and Eros; and the two former are also represented on the reverse side. What is so remarkable about the vase is the way in which the artist has worked out the subject in the brittle material of glass. The ground of the Portland vase is dark blue glass, and the figures upon it are cut out in cameo style from an outer layer of opaque glass. This now presents no insuperable difficulty to the skilled glass decorator, trained in this class of work, but when Mr. John Northwood set to work, he had to start *ab initio*, and even to make the tools which he used in puzzling out the secret of the ancient workers in glass. He spent three years over the task, and during the progress of the work a flaw showed itself in the vase, which developed till the vase split in two, but, like the pieced original, it was successfully joined together, and what occurred was no detriment to the happy conclusion of Mr. Northwood's labour. At the end of the

eighteenth century Josiah Wedgwood made fifty copies in fine earthenware of the Portland vase, and we understand that it was one of these that Mr. Northwood had as a model. It was on the day that he started to London to compare his own work with the original in the British Museum that the flaw showed itself of which we have spoken. The vase which Mr. Northwood produced is now in the possession of Mr. P. Pargiter, of Stourbridge, and its value runs into four figures.

ABROAD.

MELBOURNE MUSEUM.—Mr. Frederick Chapman, A.L.S. for many years assistant in the geological laboratory at the Royal College of Science, London, has left England to assume the position of palæontologist to the National Museum, Melbourne.

PRAGUE MUSEUM.—The Natur-historisches Hof-museum at Prague has, under the will of the late Professor B. Tirusch, long a generous donor to the museum, received his library and estate, worth over £5000.

SCIENTIFIC EXPEDITION IN CUBA.—We learn from *Nature* that Mr. S. Harbert Hamilton has started on a scientific exploring and collecting trip near Santiago, Cuba, at which place communications from those desiring to secure some of his material will reach him. The bulk will go to the botanical gardens and the American Museum of Natural History in New York, and the Academy of Natural Sciences in Philadelphia.

AMERICAN MUSEUM.—We learn from *Science* that Mr. Arthur Curtis James has purchased the collection of Ainu objects made by Professor Bashford Dean last year, and has presented it to the American Museum of Natural History. The museum has also received from Mr. W. Jochelson, of the Jesup North Pacific Expedition, his Koryak collection from Siberia, consisting of about 1,200 pieces, among which there are many objects of prehistoric age.

VANDALISM IN MUSEUMS.—Somebody has deliberately slashed and spoiled two large fourteenth-century paintings in the new Kaiser Friedrich Museum, Berlin. They depicted the Virgin Mary and Christ crucified, and were valued at more than £8,000.

BRUGES EXHIBITION.—Mr. A. G. Temple, the director of the Guildhall Art Gallery, has accepted an invitation to join the committee for the exhibition, to be held at Bruges, under the auspices of the Belgian Government, of the works of early

Flemish painters. It is hoped that the Belgian Government will permit the exhibition of pictures of the kind which are to be found in the museums and churches of Belgium.

CASTLE OF CHILLON.—During the past few years the famous Castle of Chillon on the Lake of Geneva has been the subject of a good deal of intelligent care and research, the results of which are now pleasantly apparent. A considerable amount of restoration has not detracted in any way from its value as a historical monument of the first importance. Of this nature may be specified the reconstitution of the wall and ceiling paintings in the Hall of Justice and Torture Chamber. The chamber of the Duke of Savoy still keeps good traces of its mural paintings and decorated ceiling; these have only been cleaned, and not retouched at all. In one of the courts excavations have disclosed the bases of columns which must have supported thirteenth century vaulting of a massive type. The intention of the authorities is to make the castle a historical museum; and already some exceptionally good carved wood furniture of the fifteenth to the seventeenth centuries is therein deposited. In the dining hall is a fair painting of its kind by Eugène Burnand, "The flight of Charles the Bold after the Battle of Morat," but the rare and complete set of Mediæval wrought-iron hearth furniture, including a fine turnspit, comprise objects of greatest interest to be seen there.

ADDITIONS TO THE LOUVRE.—On the inauguration of the Adolphe de Rothschild section of the Louvre, M. Molinier, the conservator of the works of art, gave an interesting discourse on their history to a large and distinguished audience. By means of these religious objects of art it is possible to trace the complete development of the goldsmith's craft of the thirteenth and fourteenth centuries in France, Italy, and Spain. Perhaps the most exquisite specimen to be viewed is a triptych, ornamented with delicate figures in relief, with enamelling and cabochons of great beauty. Its date is 1254, under the reign of Saint Louis, and it comes from the abbey of Floreffe. In another glass case three stages of this form of art work may be studied. Very remarkable is a reliquary in gold, so finely worked that it is necessary to examine its intricacies with the microscope. This is said to be valued at 300,000fr. A second reliquary is of enamelled silver between two figures of angels with spread wings. Beautiful is an Italian holy water sprinkler ornamented with painted enamels. A splendid collar of gold represents all the Passion—and a wondrous chaplet adorned with agate, with bas-reliefs of enamelled gold encrusted in the stone, are well worth inspection. Some fine pieces of sculpture attract the

attention of art lovers; among these a statuette in wood of Saint Catherine, a statuette of Saint Catherine of Alexandria in stone of sixteenth century Champenois work, a "Virgin" in silver-gilt—German—and exquisite figure of a "Virgin and Child" by Agostino di Duccio. At the end of one of the halls is a handsome piece of Flemish tapestry—"Multiplication des Pains"—which was bought with the funds bequeathed by Baron A. de Rothschild.

INTERNATIONAL CONGRESS OF AMERICANISTS.—The thirteenth session of the International Congress of Americanists will be held in the halls of the American Museum of Natural History, New York City, October 20—25, 1902. The object of the congress is to bring together students of the archæology, ethnology, and early history of the two Americas, and by the reading of papers and by discussions to advance knowledge of these subjects. Communications may be oral or written, and in French, German, Spanish, Italian, or English. All debates are expected to be brief, and no paper must exceed thirty minutes in delivery. The papers presented to the congress will, on the approval of the bureau, be printed in the volume of proceedings. Members of the congress are expected to send, in advance of the meeting, the titles, and, if possible, abstracts of their papers to the general secretary. The subjects to be discussed by the congress relate to:—1, The native races of America, their origin, distribution, history, physical characteristics, languages, inventions, customs, and religions; 2, the history of the early contact between America and the Old World. All persons interested in the study of the archæology, ethnology, and early history of the two Americas may become members of the congress by signifying their desire to Mr. Marshall H. Saville, General Secretary of the Commission of Organization, American Museum of Natural History, New York, and remitting, either direct to the treasurer (Mr. Harlan I. Smith, American Museum of Natural History), or through the general secretary, the sum of three dollars in American money. The receipt of the treasurer for this amount will entitle the holder to a card of membership and to all official publications emanating from the thirteenth session of the congress. Mr. Morris K. Jesup is president and the Duke of Loubat vice-president of the Commission of Organization.

A WHALE-SHARK IN FLORIDA.—Dr. Barton A. Bean, in a letter to *Science*, 28th Feb., 1902, announces that the United States National Museum has obtained a skin of a rare "whale-shark," *Rhinodon*, from an 18-foot specimen found on the beach near Ormond, Florida. *Rhinodon* has been described from the Cape of Good Hope, and from the Seychelle Islands, while an

allied genus, *Micristodus*, was captured in the Gulf of California; but the present is the first record of the occurrence of the genus on the Atlantic coast of America.

BIRDS OF DENVER.—We learn from *Science* that the museum of the State Historical and Natural History Society of Denver, Colorado, acquired last year a collection of about 650 birds, made by Horace G. Smith, in the neighbourhood of Denver. These, with other specimens collected by the curator, Mr. Will. C. Ferrill, raise the number of Colorado birds in the museum to about 2,500.

Correspondence.

MIDDLESBROUGH, 14TH FEBY., 1902.

To the Editor, *Museums Journal*.

Dear Sir,—In the "General Notes" of the *Museums Journal* of Jan., I observe that you have a paragraph descriptive of the museum building which is being erected by Mr. J. A. Dorman, of Gretowers, as a gift to the town of Middlesbrough.

You state also that the plans of the borough surveyor have been adopted for the building,

This is an error, as the building is being erected from designs and plans prepared by me.

Would you kindly correct this inaccuracy, and oblige,

Faithfully yours,

J. M. BOTTOMLEY

EXCHANGE AND SALE COLUMN.

Advertisements for museum specimens, books, fittings, or appliances can be inserted in this column. Sixpence for the first ten words, and threepence for every ten words afterwards.

FOR SALE.

COLLECTION OF BRITISH AND FOREIGN MARINE ALGÆ, comprising over 12,000 beautifully-mounted specimens, carefully selected during 35 years, to illustrate species, varieties, forms, and fructification. Probably the most complete private collection ever made in Great Britain; especially suited for a Reference Collection for a University Museum. Contains fasciculi and authentic specimens from Agardh, Ardissonne, Bornet, Crouan, Farlow, Ferguson, Foslie, Harvey, Hauck, Heydrich, Kjellman, Reinbold, Reinke, &c.; and the finest series existant of Holmes' Fasciculi; also type specimens of South African and Japanese Algæ.—For further particulars, apply to E. M. H., Ruthven, Sevenoaks.

FRANK SUTER & Co., Ltd.,

. . Electrical Engineers, . .

Designers and Manufacturers of Electric
Light Fittings.

SPECIALITY:

Picture and Museum Case Lighting . .

. . By Suter's Registered Reflectors.

FRANK SUTER & CO., Ltd.,

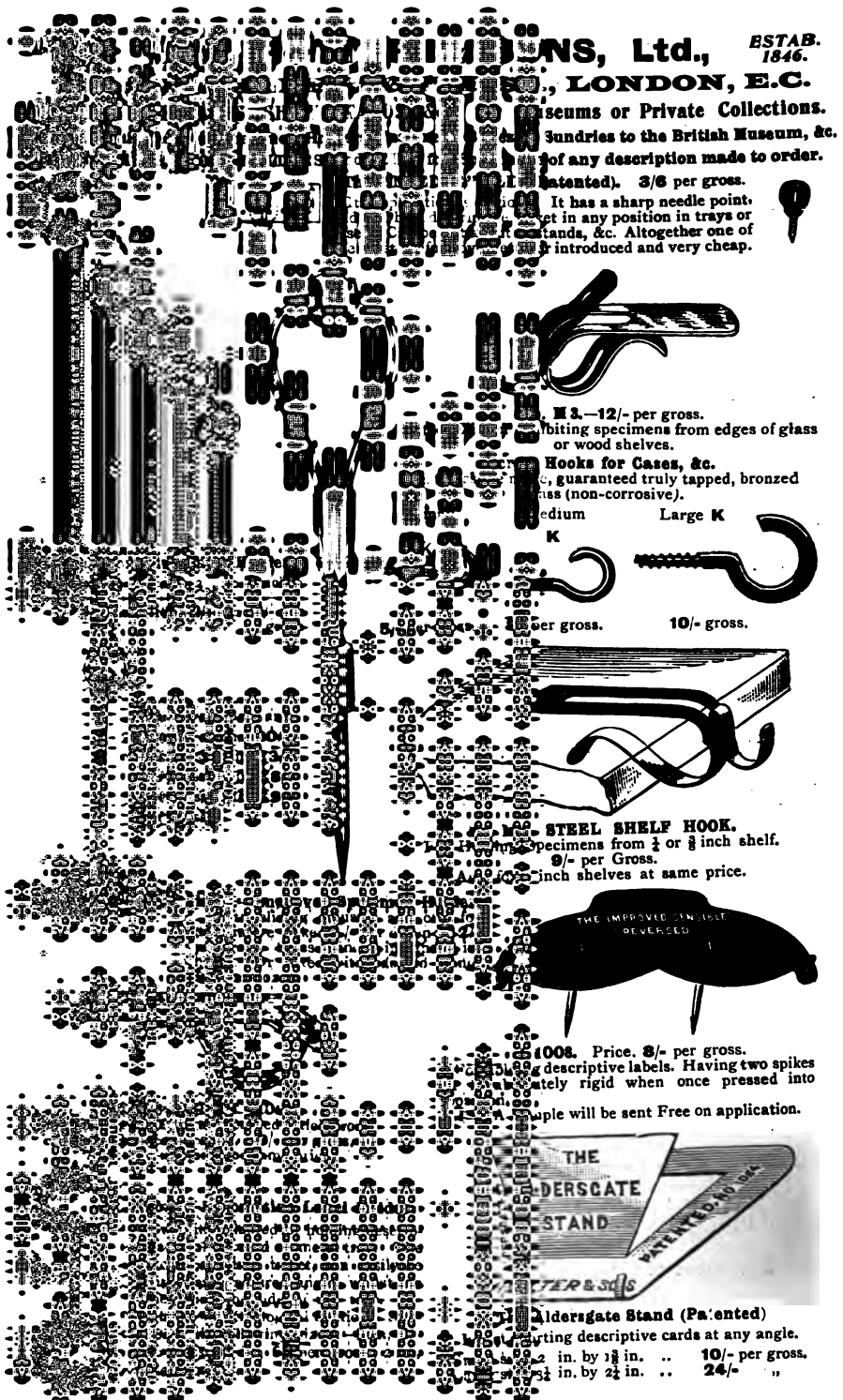
66, BERNERS STREET,

. . LONDON, W.

Marine Biological Association of the United Kingdom.

Specimens of MARINE ANIMALS and PLANTS specially preserved for Museum purposes. For detailed Lists and Prices apply to

THE DIRECTOR, BIOLOGICAL LABORATORY, PLYMOUTH.



W. & A. GILBERT, Ltd., ESTAB.
1846.
LONDON, E.C.

Museums or Private Collections.
Furnishings to the British Museum, &c.
of any description made to order.

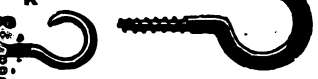
Patented. 3/6 per gross.
It has a sharp needle point.
Set in any position in trays or
stands, &c. Altogether one of
the most introduced and very cheap.



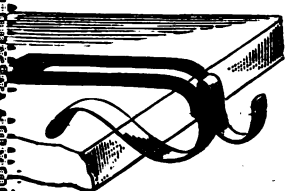
N 3.-12/- per gross.
biting specimens from edges of glass
or wood shelves.

Hooks for Cases, &c.
guaranteed truly tapped, bronzed
steel (non-corrosive).

Medium Large K



per gross. 10/- gross.



STEEL SHELF HOOK.
Specimens from $\frac{1}{4}$ or $\frac{3}{8}$ inch shelf.
9/- per Gross.
inch shelves at same price.



1008. Price. 3/- per gross.
descriptive labels. Having two spikes
completely rigid when once pressed into
the surface. Sample will be sent Free on application.



Aldersgate Stand (Patented)
Cutting descriptive cards at any angle.
2 in. by 1 1/2 in. .. 10/- per gross.
3 1/2 in. by 2 1/2 in. .. 24/- "

**Ltd., ESTAB.
1846.
LONDON, E.C.**

dries to the British Museum,
Museum, Horniman Museum,
etc.
For Illustrations, and Samples, on



No. BT3.

"Simplex" Shelf Clip.

Holding specimens from $\frac{1}{4}$ or $\frac{1}{2}$ in.
Specially useful for long narrow
labels.
6/- per doz.; 15/- per Gross.



Glass-Topped Specimen Boxes.

White paper inside and black out-
side. As used at the Geological Museum,

	Depth.	
in. by $\frac{1}{4}$ in.	..	18/- per gross.
in. by $\frac{1}{2}$ in.	..	21/- "
in. by $\frac{3}{4}$ in.	..	24/- "
in. by 1 in.	..	27/- "
in. by 1 1/2 in.	..	31/- "
in. by 2 in.	..	36/- "
Sorted equally	..	27/- "

Any other size,
prices to order.

Take in the following size covered

in. by 10 in.	..	24/- per doz.
in. by 12 in.	..	30/- "
in. by 14 in.	..	36/- "
in. by 16 in.	..	42/- "
in. by 18 in.	..	48/- "
in. by 20 in.	..	60/- "
in. by 24 in.	..	72/- "



**Neat Cardboard Tray for
Specimens.**

width, and finish as boxes No. 14,
but are $\frac{1}{4}$ in. high.

2	3	4	5	6
6/-	7/6	9/-	10/6	per gross

Larger sizes to order

Cardboard for Mounting or Writing

Per d. z.

24 by 19, 6-sheet cardboard,	2/3
24 by 19, 8-sheet cardboard,	2/6
24 by 19, 12-sheet cardboard,	3/-
24 by 19, stout tinted board,	3/6
Ivory card, 24 by 19, thick,	4/6
Ivory card, 24 by 19, medium,	4/-
Ivory card, 24 by 19, thin,	3/6

above sizes at half the prices.

NS, Ltd., ESTAB.
1846.
LONDON, E.C.
Exhibition or Private Collections.

BRACKETS,

Bracket J.

Standard Bars
Quality and Finish.

are stocked:—

BRONZED.

10	12 inch.
2/3	2/9 each.
21	21 inch.
6/6	8/6 each.

IRON (Warranted).

10	12 inch.
1/6	1/9 each.
21	24 inch.
4/6	5/6 each.

CASES.

earnestly solicited to
all for many purposes,
compulsory. We quote
FULL VALUE. Packing
condition, carriage paid,

not less than 4 feet.
up Doors -
VALUE, gin. high -
able Trays.

35/- per foot.
30/-
25/-
22/6



Useful Cabinet for private
Directors or Duplicate Specimens.
wood covered cloth. brass handles.
15 by 12 by 8 (4 drawers) 16/6
18 by 15 by 20 (5 drawers) 21/-
20 by 18 by 12 (6 drawers) 25/-
24 by 20 by 16 (8 drawers) 30/-

TAPPED BAR; Brass, Bronzed, 1/- per foot.

Ltd., **BSTD.**
1846.
LONDON, E.C.

Private Collections.

DIMENSIONS.

Total height, 6ft. 3in. (excluding ornamental iron cresting and finials).

Table Height, 2ft. 9in. depth, 4ft. 6in.

Total height of Show Case (excluding cresting), 3ft. 6in.

Height of upper part of Show Case, 2ft. 13in.

Depth of upper part of Show Cases, 14in.

The lower portion of Show Case measures at its highest 15in., and at its lowest 9in.

Bottom of Case is covered with Claret or Blue coloured Cloth. The under part of Case is fitted with Drawers, three in height and length, according to dimensions of Case. All Sashes are made on the "air-tight" principle and Glazed Plate Glass.

18ft. by 4ft. 6in. by 6ft. 3in., 18 Drawers, **£66 10/-**

9ft. by 4ft. 6in. by 6ft., 24 Drawers, **£78 10/-**

12ft. by 4ft. 6in. by 6ft., 30 Drawers, **£95**

If delivered outside London, an extra charge is made for packing, according to size, varying from £3 upwards.



Many Plate-Glass Case. Small round and top, carved pedestal with one full-sized plate-bar and brackets. Splendid

om. B Quality, without peg-
air-tight. ment or inside
fittings.

24	£15	5	0	£9	17	6
24	18	10	0	12	15	0
24	21	15	0	15	10	0
24	25	0	0	18	10	0

above, 37/6, 57/6 & 72/6 extra, made for all purposes—any
mates and drawings supplied
application.

BOTANICAL SPECIMENS

FOR MUSEUMS.

CONES OF RARE CONIFERS.
INFLORESCENCES OF CYCADS,
CYCAS, ZAMIA, MACROZAMIA,
CERATZAMIA, STANGERIA, ENCEPHALARTOS, &c.,
MALE AND FEMALE.

SECTIONS OF BRITISH AND OTHER TIMBERS.
SPECIMENS FROM THE TROPICS.
SPECIMENS IN ALCOHOL and other media.

Models of British Fungi.

ECOLOGICAL SPECIMENS.

ANATOMICAL SPECIMENS.

HERBARIUM SPECIMENS.

Insectivorous and Parasitic Plants.
SETS ILLUSTRATING ECONOMIC PRODUCTS.
PATHOLOGICAL SPECIMENS.
FOR PARTICULARS SEND FOR SPECIAL PRICE LIST.

J. BACKHOUSE & SON, LIMITED,

THE NURSERIES (Scientific Department,)

**Telegrams: "BACKHOUSE, YORK
'Scientific.'"**

YORK.

W. D. WEBSTER,

Home Court, 24, Palace Road, Streatham Hill,

. . LONDON. . .

COLLECTOR OF ETHNOGRAPHICAL SPECIMENS,

EUROPEAN AND EASTERN ARMS AND ARMOUR,

PREHISTORIC AND OTHER ANTIQUITIES.

Telegraphic Address: "ETHNICALLY, LONDON."

ILLUSTRATED CATALOGUE published every three months. Each copy contains 20 plates reproduced from photographs, and is subscribed to by all the principal Museums in the world. Subscription 10/- per year, post free, payable in advance.

A few bound Catalogues can still be obtained at the following prices:—

Vol. 1 contains	Catalogues Nos. 1 to 10	- -	30/-
Vol. 2	ditto Nos. 11 to 17	- -	20/-
Vol. 3	ditto Nos. 18 to 23	- -	25/-
Vol. 4	ditto Nos. 24 to 27	- -	25/-

The Collection consists of over 10,000 specimens from all parts of the world, any of which will be sent on approval on carriage being paid.

SPECIMENS BOUGHT OR EXCHANGED.

Photographs of
Familiar Trees
Plants & Flowers

in their SUMMER and WINTER appearance, with enlarged views of their bark, leaves, flowers and fruit showing details of structure and growth.

MAY BE SEEN at the British Museum; Royal Art Library, South Kensington; University College, London; University College, Liverpool; Museum of Science and Art, Edinburgh; &c., &c. Lists on application.

HENRY IRVING, The Rowans, HORLEY, SURREY.

MUSEUMS ASSOCIATION.

President :

Sir WILLIAM TURNER, K.C.B., B.SC., F.R.S., D.C.L., L.L.D.

Treasurer :

Alderman W. H. BRITTAIN, J.P., F.R.G.S. (Sheffield).

Hon. General Secretary :

E. HOWARTH, Museum, Sheffield.

The object of the Association shall be the promotion of better and more systematic working of Museums throughout the Kingdom. In order to promote a better knowledge of Museums, the Association shall meet in a different town each succeeding year.

That each Museum contributing not less than one guinea a year be a Member of the Association, and that individuals interested in scientific work be admitted as Associates on payment of ros. 6d. annually.

That each Museum be represented by three delegates, each having one vote. Each Associate to have one vote.

That each Museum belonging to the Association and each Associate receive one copy of the publications of the Association.

That a General Meeting of the Association be held annually, for the transaction of business, the reading of papers, and the discussion of matters relating to Museums.

MUSEUMS ASSOCIATION.

Some of the earlier volumes of the Report are nearly out of print, and Museums requiring complete sets should order them at once. Particulars can be obtained from the Secretary, Museum, Sheffield.



F SCIENCES.

The Museums of Chicago.

Ueber Museen des Ostens der Vereinigten Staaten.
Reisestudien von Dr. A. B. Meyer.
und Anthropo-Ethnogr. Museum.
102 pp., with 59 text figures, 1897.

AS in the first part of his *Reisestudien* (I, pp. 72-76, September 1897), Dr. Meyer treats not only of museums, but also of universities. In this case the Universities of Chicago and the University of Wisconsin are described. The museums described are the following: the University of Wisconsin Museum, which arose out of the Wisconsin Historical Society, chiefly through the liberality of Mr. J. M. Smith (pp. 1-14); the museum of the Chicago Historical Society, devoted to natural history (pp. 15-24); the Chicago Historical Society, containing prehistoric and prehistoric objects (pp. 23-24); the Chicago Museum, mainly devoted to pictures and some other objects, notably a large collection of scarabaei and 117 works in jade (pp. 25-26); the Museum of the University of Chicago, devoted to zoology, geography, and all branches of natural history (pp. 27-34); the Haskell Oriental Museum, also of the University of Chicago, occupied with the comparative study of religions (pp. 35-41); a museum of manuscripts, incunabula, book illustrations, and the like, at the Newberry Library (pp. 42-52). The libraries described are:—The John Crerar Library, specially devoted to the natural sciences, and technology (pp. 35-41); the Newberry Library, chiefly relating to medicine, philosophy, art, literature, and general literature (pp. 42-52); the Chicago Public Library, lending, rich in books on domestic economy, periodicals, public documents, works on art, and general literature in various languages.



The Museums of Chicago.

Ueber Museen des Ostens der Vereinigten Staaten von Amerika. Reisestudien von. Dr. A. B. Meyer. II. Chicago. Abhandl. d.k. Zool. und Anthropol-Ethnogr. Museums zu. Dresden, IX.. Beiheft, vi. + 102 pp., with 59 text-figures, 1901.

AS in the first part of his memoir, already noticed in this Journal (I, pp. 72-76, September, 1901), Dr. Meyer here treats not only of museums, but also of public libraries and of universities, in this case the University of Chicago alone. The museums described are the following:—The Field Columbian Museum, which arose out of the World Exposition of 1893, chiefly through the liberality of Mr. Marshall Field of Chicago (pp. 1-14); the museum of the Chicago Academy of Sciences, devoted to natural history (pp. 15-22); the museum of the Chicago Historical Society, containing pictures, manuscripts, and prehistoric objects (pp. 23-24); the Art Institute of Chicago, mainly devoted to pictures and sculpture, but with some other objects, notably a large collection of Egyptian scarabaei and 117 works in jade (pp. 25-34); the Walker Museum of the University of Chicago, dealing with anthropology, geography, and all branches of geology (pp. 72-73); the Haskell Oriental Museum, also of the University, largely occupied with the comparative study of religions (p. 74); also a museum of manuscripts, incunabula, book-bindings, methods of illustration, and the like, at the Newberry Library (p. 47). The libraries described are:—The John Crerar reference library, specially devoted to the natural sciences, social sciences, and technology (pp. 35-41); the Newberry reference library, chiefly relating to medicine, bibliography, history, philosophy, art, literature, and certain branches of science (pp. 42-52); the Chicago Public Library, both reference and lending, rich in books on domestic economy, works of reference, periodicals, public documents, works on fine and decorative art, and general literature in various languages (pp. 53-71);

the library of the University, consisting of 325,000 volumes, which are freely lent to the students* (p. 79); as well as minor libraries connected with the museums previously mentioned.

It will be remembered that a main object of Dr. Meyer's tour of inspection was to report on the precautions taken against fire, and, as may be imagined, Chicago was peculiarly instructive in this respect. Special pains are taken to render all buildings fireproof. Interesting details are furnished by the architects of the museum of the Academy of Sciences. The handsome exterior (plate II) is in a buff-coloured limestone, but the frame-work consists of iron pillars, sheathed in terra-cotta and coated with Keene's cement. The building in general is made fire-proof by the use of bricks of porous or spongy terra-cotta. The segmental arches above the windows, with a span of four metres, are made of large bricks directly covered with plaster. Iron girders connect the window-shafts with the corresponding columns of the interior. The roof is borne by iron girders at intervals of about a metre and a half; and on these are horizontal T-shaped girders, 60 centimetres apart. These support a continuous layer of porous book-shaped tiles, covered with a water-tight material; and on these again the outer (red) roofing tiles are directly nailed. As throughout the building, the iron portions of the roof are rendered fireproof by a sheathing of porous terra-cotta and cement. The iron spans of the vaulted ceiling over the central hall are connected by laths of sheet-iron, and the whole covered with cement, on both upper and under sides, to a total thickness of 60 centimetres. To form the inner walls, wooden laths are laid on the bricks, at intervals of 40 centimetres; these are covered with laths of sheet-iron, which are cemented. The stairs are of iron.

After reading the foregoing account, it is instructive to refer to the following paragraph, extracted from an "Historical Sketch of the Academy," by its secretary, Mr. W. K. Higley, issued on the first day of this year. "On the night of October 9, 1871, the great fire, whose record is now a part of history, swept away a large part of the city of Chicago. The

* Many books of course are lost, and a curious detail is that the loss is heaviest in theological works.

Academy's building was near the southern portion of the burned district, and time would have permitted the removal of its most valuable contents; but it seemed more dangerous to remove them than to allow them to remain, as the building was considered fireproof. Those present at the museum closed every avenue of attack by the fire, removed from the walls whatever would readily burn, piled the library and valuable manuscripts upon the floor, and departed to a place of safety, expecting on their return to find everything safely preserved; but, like all the other fireproof buildings in the city, many of which were constructed in the most perfect manner to which human art had yet attained, it went down in a fiery furnace, the magnitude of which the world had never before seen, and in an intensity of heat which even stone and iron could not resist. The lesson taught by our great disaster is that no building, however admirably constructed, can be considered fireproof, unless it is also isolated."

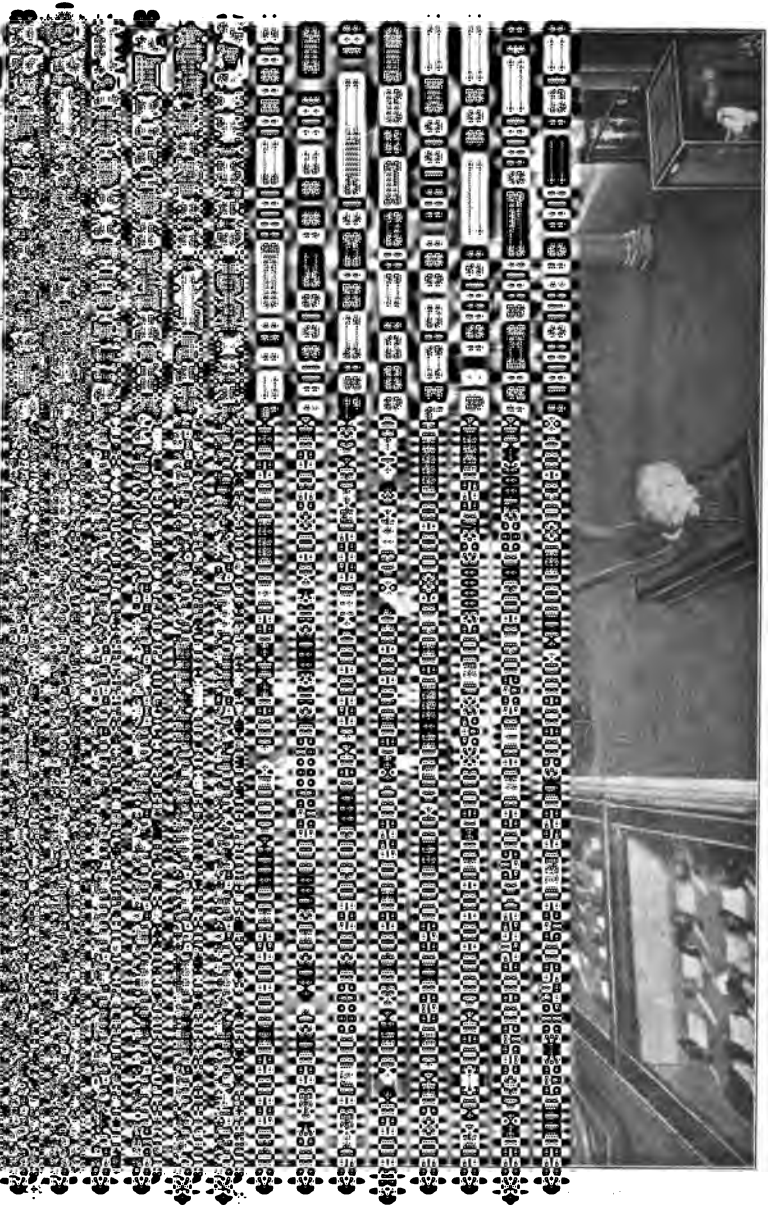
The lesson thus painfully enforced has not been forgotten, since the present buildings lie in the Lincoln Park of about 300 acres. One of the first buildings to seek enhanced protection from fire by rigorous isolation was, as Dr. Meyer points out, the Royal Library of Stockholm; and, in the absence of any such isolation, it is hard to say why Dr. Meyer should commend the buildings of the Chicago Historical Society so highly. Does he not lay rather too much stress on the entire absence of wood? Besides the books and collections, the only inflammable things are the blinds and carpets in the lecture-hall. All furniture and fittings are of iron, stone, or glass; while every room can be shut off by iron doors. Naturally this appeals to Dr. Meyer, who, on another page, goes so far as to recommend not merely iron cases and drawers, but even iron trays for the exhibition of minerals. Would it not be more to the point to clothe the staff of the museum in asbestos, with collars and cuffs of tinfoil? Seriously, however, the teaching of Chicago might well be taken to heart by those responsible for valuable collections in other countries. The collections of the English Geological Survey, for instance, are in notoriously dangerous premises; while Dr. Meyer would doubtless consider that there was far

too large and unnecessary an amount of inflammable material about both branches of the British Museum, and would unhesitatingly condemn the position of the heating apparatus in the Natural History building.

Another side of the question is presented by the Field Columbian Museum. This, being housed in one of the beautiful but jerry-built palaces of the World's Fair, is peculiarly liable to fire, and is provided with a vast array of hydrants and extinguishers, as well as with an elaborate system of thermostats and of inspection at all hours; while the rules against the introduction of fire in any form are so strict as to hamper the work of the staff. Prevention of fire is infinitely better than its cure, since quite as much damage may be done by water as by the fire itself.

Light is another difficulty of the museum curator, whether it be too little or too concentrated; but in the Walker Museum Dr. Meyer instances that rarity, a museum with altogether too much light. In the first place, the long sides of the building face north and south, so that there is too much direct sunlight on the whole of the south side. Then the mullions of the Gothic windows are too narrow, and the main floor forms one undivided room, with light coming from all four sides, and producing disturbing reflections. The cases would be better lit if some of the windows were closed. The Haskell Museum, which faces east and west, is far better in this respect.

Another great difficulty in museums, libraries, and public buildings of like nature is the management of the air. The free admission of the outer air introduces cold, damp, and the chief enemy of the curator—dust; on the other hand, attempts to control or purify the air are apt to end in its almost complete exclusion. Such was the history of the ventilation of the Chicago Public Library. While seven huge fans in the basement sucked the air out, seven others drove fresh air in. This air was washed in a water-spray, and in cold weather warmed by hot coils; it then entered each room near the ceiling, and was sucked out again near the floor. The huge plate-glass windows were firmly closed. Unfortunately, it was often found too hot in some of the rooms, and some of the



THE MAIN MUSEUM HALL OF THE CHICAGO ACADEMY OF SCIENCES.

windows were made to open at considerable expense, whereby the whole carefully thought out system was thrown out of action. Had the original engineers been consulted, they would probably have been able to remedy the defects by the insertion of larger fans, or by passing the air over ice, as is quite feasible. At any rate, the same system gives complete satisfaction at the office of the Chicago Telephone Company, where 120 women work night and day in a relatively small room; it also works well in the Library of Congress at Washington. As Dr. Meyer observes, the further trial which is to be given to it at the Chicago Public Library will be watched with great interest, since by its general adoption in museums a vast amount of cleaning and renovation, with its frequent accompaniment, the closing of the museum, will be saved. It is strange how very little attention is paid by architects, except in America, to the ventilation of museums. They seem to think that a large exhibition-hall will ventilate itself, and quite overlook the fact that on certain days in each year the hall is liable to be thronged from morning till night with a crowd urgently in need of some purifying breeze. Even collections of books, apart from their users, require free ventilation, a truth of which Dr. Meyer does not appear to be persuaded (see p. 65).

Space does not permit us to follow Dr. Meyer in his detailed description of all the Chicago museums; but we may return to the building of the Academy, which he considers one of the best that he has ever seen, and a pattern for a small museum. Through his kindness we are able to reproduce some illustrations, which will render the description more easy to follow. Agreeably with the principles alluded to in our former article (this Journal, vol. i., p. 75), the museum is built from within outwards, suitably sized cases being first chosen, the needful space between them being plotted out, and then the inner and outer architecture adapted to these requirements. Thus, as may be seen from the plans of the ground-floor and of a portion of the gallery (figs. 1 and 2), the pillars and window-shafts follow the cases, while the windows are opposite the passages between them, so that each receives a good side-light. This is the right principle, although in this case the dimensions throughout were

my necessary

of the

Museum

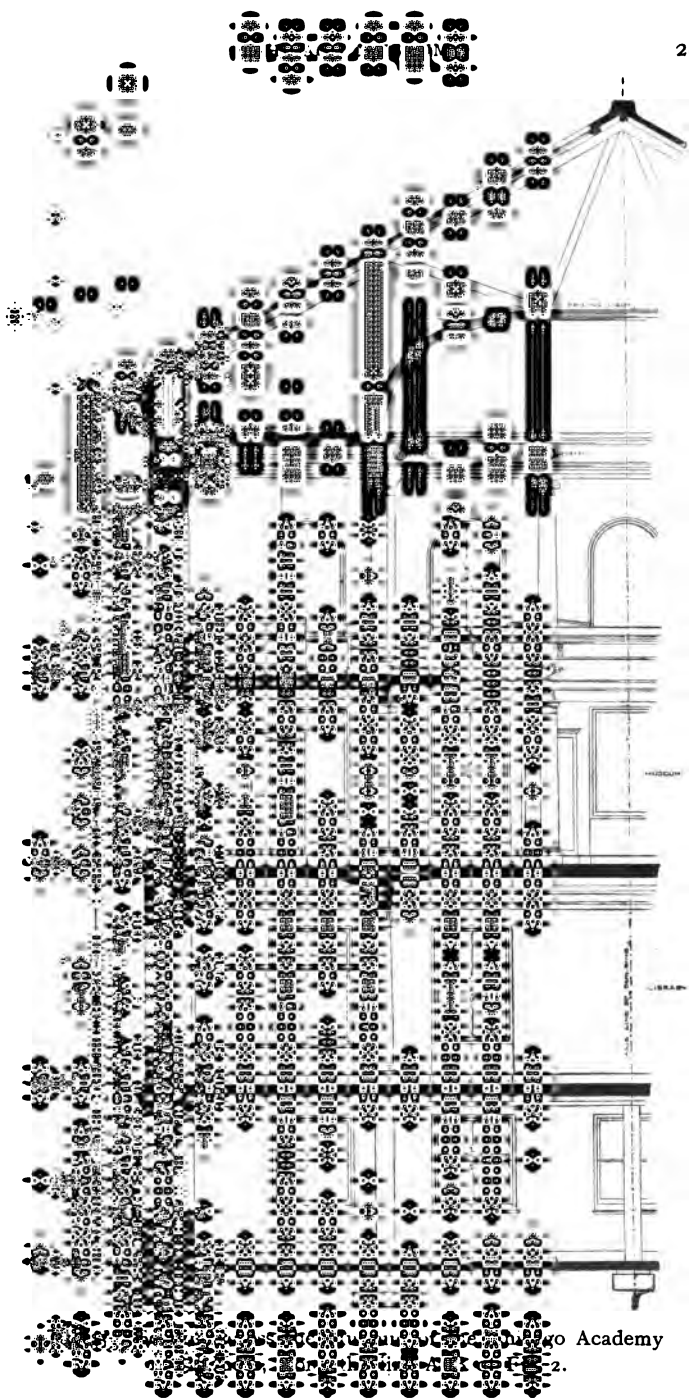
are 1, a partly
 heating, heating,
 room ; 2, first
 aquarium, library,
 on floor, which,
 with a skylight
 for the larger
 ethnographic

objects are in the cases around ; 4, gallery, with cases for insects along the inner rail, while the cases by the windows contain molluscs and lower animals and the collections of palaeontology, geology, and mineralogy ; 5, attic, which runs round the vaulted ceiling, and is brightly lit from above, while round its outer walls are store-cases for birds, shells, fossils, etc. ; unlike most of our attics, this one is completely fireproof. Near the stairs, a lift runs from the basement to the gallery floor.

The great advantage of this building lies in its combination of side and top light, whereby on the one hand the shadows cast by the side light are reduced, and on the other the reflections that always accompany a simple top light are overcome.

The cases, which, as above said, are the fundamental units of the plan, and accentuate the architectural features throughout, have a depth of 3ft. 6in. on the main floor, where they are upright cases, and a passage between of 6ft. 6in. This gives a distance of 10ft. from the mullion of one window to that of the next, while the windows have a breadth of 5ft. The table-cases on the gallery floor are of the same width as the walls between the windows. The other proportions of the cases may be gathered from the figures. The gallery rail with its cases also forms an organic part of the architecture. The larger upright cases have three doors to each side, with a single pane of plate-glass. Each can be divided by a median partition, also by cross partitions at the door-jambs. The supports for the shelves are horizontal or inclined at will. Thus the fittings and contents of the cases are readily interchangeable. "All this," says Dr. Meyer, "sounds quite simple and self-evident, but such forethought is rarely, if ever, found among other museum architects."

From the illustrations to the above quoted sketch by Mr. Higley, I gather that the table-cases are provided with a series of interchangeable drawers of different sizes underneath, and that these are closed in by a flap hinged at the plinth and falling down, when open, on the floor. It would be an improvement if these flaps could be replaced by double doors, each opening to a right angle and provided with runners



Academy

2.

screwed to their inner surfaces, so as to support the drawers when pulled out. Such a device is in use for large map-cases at the Walker Museum (see p. 73).

Details are also given of some ingenious cases in use at the Field Columbian Museum, especially some herbarium cases with doors that can be opened wide and then slid back along the side of the case out of the way; but without illustrations a description of these would scarcely prove intelligible (see pp. 9, 10).

As temporary receptacles for study-material, Dr. Meyer approves of some tin drawer-boxes of various dimensions (e.g. 75 cm. long, 50 cm. high, and 46 cm. deep) in use at the Field Columbian Museum and at the American Museum of Natural History in New York. They are made by the American Can Co., of New York and Chicago, and one of the above size costs 42/-.

From cases we pass to tablets, and here again the Academy of Sciences comes in for commendation. The curator, Mr. F. C. Baker, published a description of his tablets in the *American Naturalist* for April, 1900, and since he has kindly just sent me some specimens with added details, I will defer remarks on them till a future occasion.

Both in museums and libraries, the Americans display a thoroughness of cataloguing that may be a lesson for most of us. An account is given of the method followed in the Anthropological Department of the Field Columbian Museum (p. 7). Each new collection that comes in is provided forthwith with an accession-number and an accession-card. On the card are written, besides the accession-number, the name of the collector, mode of acquisition, number of specimens, and, in a word, all facts concerning the collection as a whole. It is placed, with all lists and letters referring to the collection, in a strong envelope, which also bears the reference-number and name of the collection. This envelope is placed in the historical file, while a duplicate of it and of its contents is made for the archives. For each object in the collection is now written a slip, containing the name of the object, a drawing if necessary, race, locality, name of collector, and

position in the museum, as well as a number, which is also placed on the object. All this is now written in the register of the department, and the accession-number is affixed to both slip and entry. The slips are now placed together in a card-catalogue case, under the accession-number; and every such set of slips is separated by a guide-slip. Finally, the collection is entered alphabetically in a large volume, under the names of the collector, the locality, and the race. Thus one can find out at once from what races or parts of the earth the museum has collections; also what collectors, donors, or dealers are represented. The accession-number directs one to the historic file, the register, or the slip-catalogue. The number on each specimen refers one to the register, and so to the accession-number and all that it implies. So complicated a system, says Dr. Meyer, demands much writing labour; but its cost is amply repaid by the ultimate economy of time due to the excellent order.

This, perhaps, is not the place in which to speak of library cataloguing; but, apart from the fact that a curator always has to be dealing with books, he may get useful hints from the methods of the librarian. The card-catalogue, needless to say, is the form always used in America, the cards in all cases being of the same size as those of the Library Bureau, if not actually supplied by them. The cards may be kept in boxes or drawers of either wood or metal, and when used for public reference are fastened in by a metal rod running from front to back through a hole near the bottom of each card; or they may be mounted in a Rudolph index-book, which permits of the insertion of fresh slips and of fresh pages in their appropriate place, as well as of the subdivision of volumes that are grown too bulky; or, more particularly for the use of the public, somewhat similar pages, with the slips inserted on one side, may be fastened side by side so as to form an endless band, which is contained in a cabinet, and is wound over a couple of drums underneath the glass lid, those portions of the band not actually in view being caught up in loops within the cabinet (like the cards in the Jacquard attachment to a loom). This ingenious apparatus is called the Rudolph continuous indexer, after its inventor, the librarian of the Newberry

Library. One will hold no less than 50,000 titles, and by simply turning a handle, either to left or right at will, all these (as I have myself seen) may be passed in review in less time than would be needed to turn to the required page of an ordinary book-catalogue.

The system of arrangement of the slips will vary with the purpose for which it is intended, and a large library will usually have two or more catalogues arranged on different plans. Thanks to the decimal classification of Dewey, and the somewhat similar expansive classification of Cutter, subject-indexing has come into far more general use in America than in Europe. The Field Columbian Museum and the John Crerar Library use the Dewey system, expanded for their own requirements; while the Newberry and Public Libraries use modifications of the Cutter system. Dr. Meyer does not attempt to compare the two systems, but he mentions that the arrangement of the 70,000 volumes in the John Crerar Library, according to the Dewey system, is so practical that it takes on an average only 1 minute 38 seconds for a book to be in the hands of the person that requisitions it. In addition to this subject-catalogue, and to the ordinary author-catalogue, with which we in England are most familiar, the large American libraries usually have a dictionary-catalogue, that is to say, a combined author and subject index in continuous alphabetical order. The subject-catalogue is not always confined to independent works, but, as in the Field Columbian Museum, the more important papers in scientific periodicals and in the publications of learned societies are also indexed. This is not merely of inestimable value to the student, but must often save the librarian from purchasing, as a professedly independent publication, a book that really is only an excerpt from some serial already in his library.

There are two features in this cataloguing business that call for special approval. With us a librarian is generally content when he has catalogued all the books in his own library; what may be in other libraries is no concern of his. But in America, and notably in Chicago, every opportunity for co-operation is eagerly seized, to the no small advantage of the student. Thus, the catalogues of other libraries in the

city are either incorporated in one of the larger public catalogues, or are kept in a handy position for ready reference. Again, full use is made of the numerous bibliographic card-catalogues that are now issued, chiefly thanks to American enterprise. For a large number of books and memoirs, it is quite unnecessary for a librarian to write or print slips, since he can buy them ready made from the American Library Association. This is done, for example, by the John Crerar Library, which also keeps for public reference the cards issued by Dr. Field at the Concilium Bibliographicum in Zurich, by the Torrey Botanical Club, the Department of Agriculture in Washington, the Bibliographic Institute in Brussels, and several others.

This co-operation of libraries naturally leads to a division of labour. Thus, the John Crerar Library specializes in natural science, sociology, and technology; the Newberry in medicine, history, art, and *literae humaniores*; the University in philology; and the Public Library in more popular literature. The extraordinary difficulty that a student has, even in London, in seeing the literature of his subject—in fact, the impossibility, unless he is prepared to spend large sums of money on his private library—must have made many a one long for the day when the learned societies and other library authorities of London shall take this question of co-operation in hand. To what end is all this fuss about an international catalogue of scientific literature, with its elaborate mechanism and enormous expense, if, when the list of books is in his hands, it be still impossible for the student to refer to them? The amount of money annually spent by Government, through the libraries of the British Museum, the Education Department, the Patent Office, and the like, when joined with that spent by the great societies, such as the Royal, the Zoological, the Linnean, the Geographical, the Geological, with the College of Surgeons and other public bodies of like character, is, surely enough, if properly administered, to buy the world's output of books each year; and far more than enough, if we remember that all publications of the United Kingdom go to the British Museum as a matter of course, and that the donation lists of many of these libraries are nearly as big as

their purchase lists. If only the money could be pooled, and the purchases distributed according to some pre-arranged scheme among the various libraries; and if a joint catalogue were prepared, and kept up from month to month, shewing not only the titles of books, periodicals, and papers, but the libraries in which they were to be found, then weary searching and fruitless wandering would no longer be the lot of the conscientious student. Even as things are, without so radical a reform as a redistribution of income, I feel sure that a conference of librarians, bent rather on furthering the interests of the reader than the pride of their own institutions, and armed with the necessary powers for co-operation, would soon lift London libraries out of the hopeless muddle that we now have to struggle with.

The second of the features that I marked for approval and imitation is the duplication of catalogues. By this I do not mean the production of various kinds of catalogues, nor the printing of many copies of a catalogue for sale, nor even the multiplication of copies for distribution to neighbouring libraries, as, of course, has to be done under the scheme of co-operation that has been outlined. But I mean, in the first instance, the simple copying of the catalogue or register, so as to be prepared for accidents. In many museums it is probably the case that the bulk of the information relative to a large part of the collections is preserved in a manuscript register, and that of this there is only one copy. Exposed as this copy necessarily is to the innumerable risks of daily use, the upset of an ink-pot or a spirit jar, leakage of rain through a skylight, rats, fire, and so forth, there is a very real danger that this precious and irreplaceable information may suddenly be lost, and that the specimens affected by the loss may become little better than lumber. The value of a register is well known to experienced curators; they know that letters get mislaid or destroyed, that labels may unaccountably be found associated with obviously wrong specimens, and that from one cause or another one has constantly to be referring back to the original register. Such curators, therefore, will agree that all possible details with regard to a specimen should be entered in the register. The correct name of the object does not matter in

the least, since what is correct to-day will very likely be wrong to-morrow ; but in the absence of a name there should be something to identify the specimen in the event of the register-number being lost, and all other information as to locality, mode of accession, and the like, should be of the fullest. If we are agreed upon this, we shall doubtless further agree that a document so valuable as a properly kept register should always be kept in duplicate, and that the duplicate should be preserved in a fire-proof safe, securely locked every night. Into the processes that may be employed for duplicating or manifolding catalogues, one cannot here enter at length. The ingenious Mr. Rudolph above referred to has published in the *Library Journal* (xxiv., 102-105, 1899) an article on "The blue-print process for printing catalogs," which will repay perusal. He has also recently invented, though not yet published, a method of reproducing printed matter by means of the Röntgen rays.

To return to the museums. The expenditure of the Field Columbian Museum for one year (1888-9) is given as £27,000, which, says Dr. Meyer, is more than is spent on all the collections of Dresden put together. In comparing the expenses of American and European museums, we have to remember, first, that wages are higher in America ; secondly, that the Americans have a great deal of lost time to make up for, and that they have to do this rather rapidly, before all the surface of the earth is parcelled out in building lots. But beyond this it must be admitted that the Americans really do take these matters more seriously than we do : they recognize the importance of museums in national advancement. This may also explain the fact that, according to Dr. Meyer, the hours of work in American museums are, as a rule, longer than in European. The officers of the Field Columbian Museum have a working day of nine hours, with one off for lunch. In England the official hours are not so long as a rule ; still there must be many curators who give more than eight hours a day to their collections. It may be noticed, in this connection, that the director of the Field Columbian Museum is not a scientific expert. Here, as in the case of many of their universities, the Americans recognise the advantages that a good man of affairs often has over the specialist.

This notice is headed "The Museums of Chicago," simply because that is the nearest rendering of Dr. Meyer's own title; but it will long since have become obvious that such a title is wholly insufficient, and had it been possible for us here to follow the author in his account of the organization and methods of the University of Chicago, which forms not the least interesting part of the book, it would have been clear that its contents appeal to a far wider circle than that of museum curators and librarians. The work is one to be studied by all educationalists; but to say even that is to hint at too strict a limit for its public. When we consider the energy, originality, and progressiveness of the Americans, as exemplified in the intellectual institutions of Chicago, a city which we in England are wont to associate with quite other activities; and when we contrast them with our outworn and unbusinesslike methods, or with our faint-hearted and unbelieving attempts at improvement, we shall long for the means of bringing this valuable report to the attention of all who have at heart the welfare of their country.

F. A. BATHER.

Some Useful Applications of Card Catalogues.

BY WILLIAM E. HOYLE, M.A.

THE use of card catalogues is now so widely spread, and their special advantages are so well understood, that it seems almost needless to dwell upon them. I need only recall to your minds the most important, namely, the facility with which they are kept up to date, as additions can always be made at the proper point instead of merely tacked on at the end. The card catalogue, too, is quicker and easier to consult, if (and this is a most important proviso) the number of guide-cards be adequate.

With the use of card catalogues for ordinary library work I do not now intend to deal—those who wish information on the subject will find it discussed at great length and fulness in the various journals and transactions dealing with library management and organisation

I propose in the first instance to show you a simple application of it to one of the purposes of a scientific society. I have here a tin box $27 \times 13 \times 8$ cm., which contains the list for sending out the *Journal of Conchology* to the members of the Conchological Society. Each member has a card 12.5×7.5 cm., the size and form in common use for card catalogues; on the face at the top is the name and address of the member, with title, etc., as it should be written on the envelope. The back of the card is ruled, and on it is stamped with an ordinary rubber date stamp the day on which each number is despatched. When a new member is elected, a card is placed in the box in alphabetical order; when a member resigns or dies his card is removed. It is obvious that similar cards can be used for showing the dates when subscriptions are paid, or if the offices of secretary and treasurer are combined in one personality, the same set of cards may serve for both purposes. The cards are perforated near the bottom, so that a rod can be run through them to retain them in position.

I shall now show you a more complicated arrangement in the system adopted for sending out the publications of the Manchester Museum, with which I have the honour to be connected.

These publications have to be sent to the following categories of persons :—(1) The museum committee, (2) the governors and staff of the Owens College, (3) the Manchester city council, (4) the subscribers to the museum, (5) institutions which exchange publications, (6) the press, (7) persons who give donations or otherwise express special interest in the work of the museum.

These lists are constantly changing, owing to deaths, resignations, new appointments, elections, etc., and they must all be checked and brought up to date each time a publication is ready to be sent out.

Besides, there is yet another complication. Some of these categories receive all the publications of the museum, others only the annual report. The box of cards you see before you has been arranged to enable this work to be carried out with the least possible expenditure of time and labour.

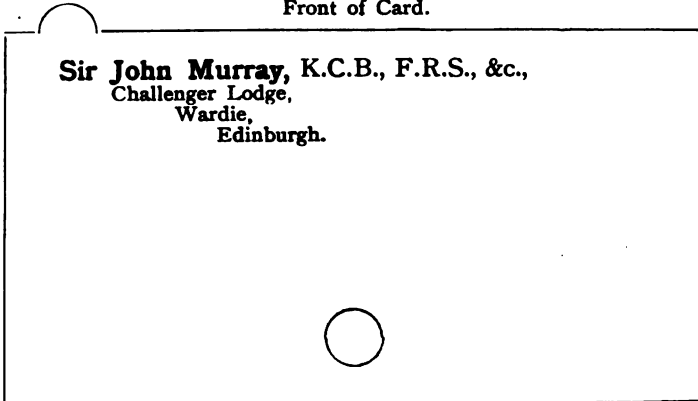
Every person or institution has a card, on the front of which is the postal address clearly typewritten exactly as it should appear on the envelope, so that any person who can write distinctly may direct the envelopes. Those persons who receive all the publications have a blue card, those who receive only the annual report a white card. Every card has on its upper margin an outstanding projection or tab, in one of twelve possible positions, and a particular position is associated with each category of persons ; thus the members of the college staff and governors have a white card, with the tab in the 12th position ; the museum committee a blue card, with the tab in the 4th position. When the annual report, for example, is ready to be sent out, an assistant takes the last issue of the College Calendar and runs through those cards whose tabs are in the 12th position, adding new cards if required, and remov-

ing those no longer needed ; the members of the city council are checked by the official list, and so on. The list is then ready, and the envelopes are addressed from it.

On the back of each card is placed with a rubber stamp the number of the publication in question and the date of its despatch. This information is placed in an inverted position, so that it may be read by simply looking over the top of the card.

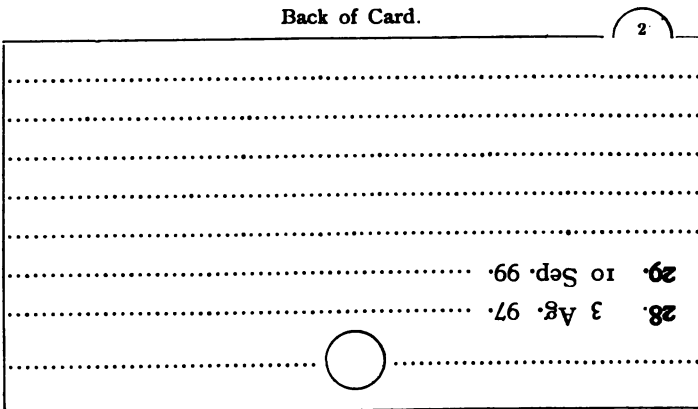
Example 1 :—

Front of Card.



Sir John Murray, K.C.B., F.R.S., &c.,
Challenger Lodge,
Wardie,
Edinburgh.

Back of Card.



28. 3 Ag. 97.
29. 10 Sep. 99.

I now come to deal with the question of the application of card catalogues to bibliographical purposes, and shall take for my illustration the elaborate Bibliography of Zoology published by the Concilium Bibliographicum at Zürich under the direction of Dr. H. Haviland Field.


The scheme which Dr. Field has been gradually elaborating during the past ten years is nothing less than a complete card catalogue of zoological literature, beginning with the year 1896. It is intended to include not only books independently published, but also the thousand and one memoirs, papers, and notes which are published in journals and in the transactions of learned societies, irrespective of language and place of publication. It is calculated that upwards of 8000 titles of zoological works are to be dealt with every year, and these are distributed over about 1500* different publications. Besides the zoological bibliography described here, the "Concilium" publishes two other complete bibliographies upon the same scheme; the anatomical on cards only, and the physiological, which appears in card as well as in pamphlet form. The magnitude of this task is appalling, but Dr. Field does not despair of accomplishing it by means of thorough and careful organisation.

The cards are 12.5 × 7.5 cm., which is the standard size of the Library Bureau and several other agencies. A single title is printed on each card, giving on the top line at the left the name of the author, and at the right a classification number; then immediately below, the year of publication, title of the work, name of the journal or other place where it is to be found, number of pages, plates, and other illustrations, whilst at the foot of the card is the signature, and in the case of cards on palæontology and zoology the two first figures of the class number, as will be explained below. Further, if the title does not sufficiently indicate the nature of the contents, a brief explanatory note is added (see Example 2); new generic names

* The actual number of periodicals from which the cards issued from 1896 to 1900 were taken was 1576.

proposed are given, and if new species are described the fact is stated, as also the genera to which they belong (see Example 3).

Example 2 :—

Boulenger, G. A.	14.31.4 : 81.2
1896. Remarks on the Dentition of Snakes and on the Evolution of the Poison Fangs. Proc. zool. soc. London, 1896, Pt. 3, p. 614-616. [Criticism of G. S. WEST, Proc, 1895, p. 812. Missing teeth mistaken for diastemata. 5 grooved teeth in <i>Oxybelis</i> . No fundamental difference between Proteroglypha and non-venomous Colubridæ.]	
In Bibliographia Universali-59	 edidit Concilium Bibliographicum Typographia Concilii Bibliographici.

Example 3 :—

Rothschild, W., and K. Jordan.	57.87 Asota (502)
1897. Notes on Heterocera, with Descriptions of new Genera and Species. Novitat. zool. Tring. Vol. 4, p. 314-365. 1 pl. [Asota : 3 nn. spp., 36 nn. subspp.]	

The classification number above referred to is perhaps the most important part of the whole scheme. It is based on the decimal system of Melvill Dewey, which has been greatly extended, without being altered, in order to meet the requirements of this catalogue. For instance, the large group of worms, which Dewey left as a unit under the number 595.1, has been subdivided into seventeen classes, in accordance with the developments of systematic zoology. The heading "Geographical Distribution" has been greatly enlarged, so as

to include not only particular countries and states, but also such local categories as deserts, caves, oceans, rivers, lakes, &c.

To avoid needless repetition, the figures 56 and 59, which indicate respectively palæontology and zoology in general, are omitted from the heading, and placed separately with the signature at the foot of the card.

The classification number is given in full, so as to represent, as far as possible, the whole subject of the paper. The great majority of papers fall under more than one heading. For instance, the memoir quoted in Example 2 treats of the teeth of the snake. Its class number consists of two parts—the number for teeth, 14.31.4, and the number for snakes, 81.2, and these are both printed consecutively and separated by a colon, the systematic numbers being printed in heavy type, so that they may be readily distinguished.

This paper is just as important to the student of teeth as to the student of snakes, and anyone looking up anatomy of teeth ought to be referred to it, just as should anyone seeking information about snakes. Therefore two cards are printed, with the numbers transposed: thus, one card has **81.2**: 14.31.4, and finds its way in sorting to “snakes”; the other has 14.31.4: **81.2**, and finds its way to “comparative anatomy, teeth.”

Example 4:—

Hall, T. S.

47.1 Adeona: 14.99

1897. On the occurrence of the Anchoring Tubes of *Adeona* in the Older Tertiaries of Victoria, with an account of their structure. *Proc. R. Soc. Victoria N. S.* Vol. 9, p. 1-4. 1 pl.

To take a still more complicated instance (see Example 4); the above paper contains information which may be needed

by the student of bryozoa, of comparative anatomy, of palæontology, and of geographical distribution. Hence four cards are printed with the class numbers as follows :—

(118) : **47.I Adeona.**

(94.5) : **47.I Adeona.**

14.99 : **47.I Adeona.**

47.I Adeona : 14.99.

In sorting the cards into their places by the numbers, the first will find its way to tertiary period; the second to Australia, Victoria; the third to appendages of the body, fixing organs; and the fourth to bryozoa, gymnolæmata, genus *Adeona*. Thus it will be seen that the information it contains will be supplied to the seeker from whatever avenue he may approach it.

This facility for double and multiple reference is perhaps the most striking feature of Dr. Field's system.

The rule which applies to the arrangement of books in a library—classify every title in the most minute division possible—is of paramount importance in a work like the present, where it is so necessary to restrict the number of cards to be examined by anyone in search of definite information. The need for subdivision is seen when we consider such a group as the butterflies, a favourite object of study by naturalists, both professional and amateur, in all quarters of the globe, on which as many as 1,200 works have been published in a single year. To meet such cases a special method of classification has been devised. The limits and number and even the very names of families are by no means agreed upon among naturalists; hence it is out of the question to carry out the decimal scheme to groups of such small systematic value; an alphabetical arrangement has therefore been adopted in the case of papers dealing with a single family or genus, the name being affixed to the class number in order to serve as a guide to placing the cards in sequence (see Example 3).

In order to facilitate reference the catalogue is provided with guide cards, such as are familiar to everyone who has worked with a card catalogue. Dr. Field has published a

series of these guides, of graduated sizes, with a tab projecting above the level of the cards, and having on it the name of the main division, so that this at once catches the eye. Each main card, too, bears a printed list of its subdivisions, with their numbers (see Example 5).

Example 5 :—

6 Vertebrata	
7	Pisces
76	Amphibia
8	Sauropsida
81	Reptilia
82	Aves
9	Mammalia

As a further help there has been issued a descriptive pamphlet, containing explanatory paragraphs and a number of indexes. There is first a *conspectus methodicus*, which gives a bird's-eye view of the whole scheme with the proper numbers affixed to each division. Then follows an alphabetical index, in Latin, English, French, and German, in which are included the names of all parts of the body whose anatomy and physiology may be treated, geographical names and systematic divisions of the animal kingdom, besides general topics such as heredity, degeneration, evolution, and the like.

As an instance of the utility of this catalogue, we may quote a recent report of the Swiss Society of Naturalists. It endeavours to estimate in a specific case the saving of time afforded by the card catalogue in obtaining references to recent publications in regard to the trout. The saving is estimated at half a day. But in regard to other cases the saving is far greater. Let any zoologist familiar with past bibliographical resources consider how he would go to work to ascertain what has been published in the past five years in regard to some minute question, such as the fauna of Sumatra. A moment's reflection will suffice to show that it would be a task of many weeks to obtain an answer to such a question. Yet a subscriber to the faunistic part of the bibliography of

the *Consilium* would only require a few seconds to find 62 publications dealing with the question. The titles of ten of these publications would, it is true, bear no mention of Sumatra; they are classed here because on perusing the text important references to Sumatra were found. Some, indeed, bear titles that would seem to absolutely preclude any notes on the fauna of Sumatra, as for example, a work on "The insects of Germany." Subscribers to any considerable portion of the bibliography would have received these references for 80 centimes (8d.), and any person, whether a subscriber or not, could receive the information for 3 fr. 10 (2s. 6d.). Surely no comment is necessary to prove the value of the work and the extreme cheapness of the service.

There is no doubt that when the admirable qualities of the catalogue become more widely known in England, more and more zoologists will subscribe to it and provide themselves with the cards bearing on the subjects of special value to them:

For subscribers receiving from 1000 to 1500 cards per annum the charge is 2.25 francs (about two shillings) for white cards and 1.35 francs for thin brown cards per hundred, whilst for those undertaking to receive the whole set the prices are as low as 1.30 francs and 90 centimes per hundred respectively.

With the question of the card system as applied to the systematic cataloguing of species in a museum, I have already spoken before this association (Report of Cambridge meeting, 1891). To what was then said I will only add that I think the modern form of guide-card in which only a portion of the upper margin projects is preferable to the one there advocated.

General Notes.

AT HOME.

INSURANCE OF LOANS.—It has been officially announced by the Board of Education that when a loan collection from the Victoria and Albert Museum is in charge of one of the Board's attendants during transit to or from South Kensington, the Board are prepared to omit the stipulation as to insurance during transit.

BRIGHTON MUSEUM.—The Brighton town council propose to appoint a chief librarian, whose duties will also include the superintendence of the corporation museums and art galleries. Commencing salary, £300 per annum, and applications are to be made, on forms supplied by the town clerk, by noon on May 2.

BLACKBURN MUSEUM.—The report of the Blackburn Free Library, Museum, and Art Gallery, from August, 1900, to July, 1901, is very satisfactory. The museum has been rearranged with great success, and the fine collection of Lancashire birds completed. There were 65,500 visitors during the year. The list of donations to the library and museum is a very extensive one, and includes a valuable number of spear-heads, &c., from North America, given by Mr. Robert Thompson, of Mass., U.S.A. The museum has issued a most admirable guide to the magnificent collection of minerals, which had its origin in the fine series given by Mr. Eccles, written by Mr. J. G. Goodchild, F.G.S., custodian of the Scottish mineral collection in the Edinburgh Museum of Science and Art. The guide is arranged in accordance with Dana's system of mineralogy, giving a complete description of the specimens on view, and some account of their economic uses, which is not only useful but also entertaining, such as the knowledge exhibited of the arts and customs of the stage, under the heading of "Stibnite and Molybdenite," which is peculiarly refreshing in a body of men so austere as curators. The section on agates is particularly good, and it is interesting to note that many of the agates come from Uruguay as ballast. There are some good examples of witherite and of epidote and vanadinite. The guide is worthy of study and of imitation.

WORCESTER MUSEUM.—The report of the library and museum committee for the year 1900-1 shows that the museum section of the institutions under their charge is labouring under considerable difficulties of a financial character. The work of the museum is, however, going steadily on, the collec-

tions being classified and named and new specimens added. A special feature has been made of the summer permanent exhibition of living wild flowers. This was followed by collections of edible and non-edible fungi. A fine collection of locally grown apples and pears was also exhibited for some weeks, an exhibition especially interesting in the land of cider and perry. By the addition of a new case top it was found possible to exhibit properly the collection of minerals, which has been mounted and fully labelled. In fact, the report shows that the scientific and educational work of the museum is being well advanced, owing to the unremitting labours of the curator and some voluntary helpers; for the city of Worcester evidently objects to spending much money on its museum. According to the statement of expenditure and receipts at the end of the report, it seems that of the sum of £928 of ordinary expenditure, less than £150 is on account of the museum, the remainder going to the library, rather an unequal division. Of a special legacy account, £50 went to the art gallery £14 to the museum, and £152 to the library.

ABROAD.

MILWAUKEE MUSEUM.—We learn from *Science* that Mr. Henry L. Ward, of Ward's Natural Science Establishment, Rochester, N.Y., has been elected custodian and secretary of the public museum of Milwaukee.

COLORADO COLLEGE MUSEUM.—A natural history museum is to find place in the new science and administration building that is just begun at Colorado College, Colorado Springs. Mr. F. W. Cragin is, we believe, the chief representative of the natural sciences at the college.

WEBER COLLECTION, ZURICH.—Mr. John Weber, of Winterthur, has purchased out of private hands the collections and manuscripts of Joh. Jac. Scheuchzer, and has presented them to the University of Zurich, where Scheuchzer was professor of mathematics. Scheuchzer was a very learned man, who wrote, among other works, a natural history of Switzerland. He chiefly interested himself in fossils, which he regarded as evidences of the Deluge, and he will long be remembered as the discoverer of the gigantic salamander in the miocene of Oeningen, a fossil which he himself described as "*homo diluvii testis*." That specimen, however, is now in the Teyler Museum at Haarlem.

Last month the department of vertebrate palæontology placed on exhibition in its hall a remarkable specimen of an extinct dog, from Skillet Creek, Donley Co., Texas, which has

been described by Dr. W. D. Matthew, under the name *Dinocyon Gidleyi*. The animal is the largest of the dog-family thus far described, and belongs to an extinct race, resembling in many respects the bears. It must have equalled or exceeded the polar bear in size. The specimen consists of the skull, with a considerable part of the spinal column attached, and parts of two bones of the leg. A restoration of the head of the animal has been made in water-colours by Mr. Charles R. Knight, and is exhibited in connection with the specimen.

ENUMERATION OF MUSEUM VISITORS.—At the United States National Museum the number of visitors is recorded by the door-keeper by means of a little counting machine of the size of a watch. This is held in the hand, and, by pressing a key, placed where the stem of a watch is situated, each visitor is counted as he enters. While this is not so exact a registration as that obtained from turnstiles, it is sufficiently accurate and not so annoying to visitors. Besides there are times when 10,000 or more visitors are present on a single day, when turnstiles could not be used. In England, however, more than 100,000 people have passed through the turnstiles in the course of a single day, and it is no uncommon occurrence for 10,000 to enter a museum in one day through turnstiles. Obviously one individual could not accurately count such a number.

AMERICAN MUSEUM OF NATURAL HISTORY.—The annual meeting of the trustees of the museum was held on Monday evening, February 10th. The report of the treasurer shewed that there had been disbursed for maintenance \$147,773.75, which was \$17,773.75 more than had been appropriated for this institution by the city. The deficit, however, had been met by the contributions of the trustees, which enabled the museum to begin the current year free of debt. The subscriptions for the increase and improvement of the collections and for publication amounted to \$141,452.13, of which \$37,500 was received from the trustees, and \$11,500 was derived from gifts made by numerous other contributors. The remainder of the sum total was in the nature of funds subscribed for expeditions in the field, for specific branches of the museum's work, and for the purchase of special collections. The expeditions maintained during 1901 were the Jesup North Pacific expedition; the Hyde expeditions in the south-western States and in Mexico, supported by Messrs. B. T. Babbitt Hyde and F. E. Hyde, Jun.; expeditions for archaeological research in the Delaware Valley, supported by Dr. Frederick E. Hyde; the Mexican expedition under the patronage of the Duke of Loubat; an expedition in the Far East, for the collection of material illustrating the life and customs of the

Chinese ; an expedition throughout the western States in search of specimens for the formation of series shewing the evolution of the horse, the cost of which was met by William C. Whitney ; the Andrew J. Stone expedition to the North-west, for the purpose of obtaining specimens of the large game animals of the continent ; expeditions from the department of vertebrate palæontology to Wyoming, Colorado, and other parts of the West, for fossil reptiles and mammals ; an expedition to the Selkirks for birds ; one to South Dakota and Wyoming for fossil invertebrates ; and one to the Black Mountains of North Carolina for insects. Among the notable acquisitions received during the year there may be mentioned a unique and valuable collection of gold coins, to the number of eight hundred, from the Philadelphia mint, presented by Mr. J. Pierpont Morgan ; the Briggs collection of Indian basketry, presented by Mr. George Foster Peabody ; a series of Ainu objects, made by Professor Bashford Dean, and presented by him and Mr. Arthur Curtiss James ; a very large collection of shells, donated by Mr. Frederick A. Constable ; large additions to the Hoffman collection of butterflies, by the Very Rev. Eugene A. Hoffman ; the Sennett collection of 8,000 birds ; the Dorenburg collection of Mexican antiquities ; and a large collection of Indian objects. The scientific staff of the museum has been active along the line of publication also, having issued during the year six parts of the quarto *Memoirs* ; Part IV. (conclusion) of Volume XI., Volume XIV., and Part I. of Volume XV. of the *Bulletin* ; and eight numbers of the *American Museum Journal*. Four of the *Memoirs* emanated from the anthropological department, one from the entomological department, and one from the department of vertebrate palæontology. Mr. Morris K. Jesup was elected president for the twenty-second term ; Mr. Wm. E. Dodge and Professor Henry Fairfield Osborn were re-elected first and second vice-presidents respectively ; Mr. Charles Lanier was re-elected treasurer ; and Professor Hermon C. Bumpus was made director of the museum.

THE U.S. NATIONAL MUSEUM.—Although the Americans are well to the fore in museum work, yet, for some unexplained reason, their National Museum does not receive from the government that pecuniary aid which is its due. A note in the *Popular Science Monthly* for April says :—"The present building is truly a scandal. Specimens of great value are exhibited—most of them are, as a matter of fact, stored out of view—in inflammable sheds. While the number of specimens in the National Museum is more than double the number in the American Museum [in New York], the space of the American Museum is ten times as great as that of the

National Museum, and the cost of the buildings was also ten times as great. Washington is becoming a scientific centre, rivalling London, Paris, and Berlin, but compared with the museums maintained in these cities by the Government, our national museum is not creditable. The collections, though large, are not systematic, having resulted from expeditions, gifts, and the like; while no appropriations have been available to fill in the gaps which always arise when collections are formed by such methods. The curators do not receive adequate salaries; indeed, of the twenty-one curators, twelve serve without any salary at all." Secretary Langley has recently made urgent recommendations to congress for the enlargement of the museum building, and many besides American men of science will pray for the success of his efforts.

CARNEGIE MUSEUM.—Dr. W. J. Holland, in the report of the Carnegie Museum, notes the employment of a compressed air machine for dusting the exteriors of cases and cleaning large specimens, and promises details later.

THE AMERICAN MUSEUM JOURNAL.—*The American Museum Journal* was founded with the intention of keeping the subscribers to the museum funds informed of the progress being made in the various departments, as well as of the more important accessions. Recent numbers of the journal have been accompanied by supplementary leaflets intended to serve as handbooks to certain collections or important portions of the exhibition series. One of these illustrated leaflets was devoted to the recently completed group shewing the bird fauna of the historic Bird Rocks, in the Gulf of St. Lawrence, while another described the Saginaw Valley collection of Indian implements. The January number of the journal contains a supplement devoted to the Hall of Fossil Vertebrates, which contain perhaps the finest exhibition series of fossils in the world. It is announced that these supplements will be continued for the present.

KANSAS UNIVERSITY MUSEUM.—The plans for the museum of the State University of Kansas shew a handsome building in the Italian style. We hope to give details of this later, and will only now note that in the zoological portion of the museum the experiment is to be tried of having the mammals displayed in a large cyclorama amid their natural surroundings. In view of the difficulty experienced in combating dust and insects under the most favourable circumstances, the outcome of this experiment will be watched with interest. That such an exhibit will be attractive is evident from the display of mammals in the Kansas building at Chicago in 1893; but that it will stand the test of time remains to be seen.

U. S. NATIONAL MUSEUM.—The U. S. National Museum is still engaged in erecting galleries around its halls in order to accommodate the steadily growing collection. Not only has all available space in the museum been occupied, but considerable portions of the study series and duplicates have been placed in storage, while the museum workshops are located in two or three places at some distance from the museum building. Those who recall the long-continued efforts necessary to secure the present British (Natural History) Museum will sympathize with the attempts of the authorities of the U.S. National Museum to obtain adequate quarters.

Dr. O. P. Hay, of the American Museum of Natural History, has for some time past been engaged in the compilation of a bibliography of North American fossil vertebrates, to be published by the U. S. Geological Survey. About 600 pages of this important work are now in type, and it is hoped that the volume, which will contain between 1,000 and 1,200 pages, may be issued next autumn.

SPRINGFIELD MUSEUM, MASSACHUSETTS.—The report of the Museum of Natural History, Springfield, Mass., U.S.A., for 1900, contains some good views of the building, the architecture of which is a little mixed. As usual in American museums, there are lengthy accounts of the donations which are so liberally donated by our cousins, and so gratefully acknowledged by their recipients. The figures for attendance are imperfect, but Sunday opening has evidently been a great success, and the curator is not afraid of saying that "it is very desirable that parents or older persons should accompany children," a matter which has probably occurred to curators elsewhere. For once the statement that "experience warrants great confidence in the generous spirit of our citizens" appears justified by the results. The report for 1901 shews that careful attention has been given to the proper setting of the specimens, and that good results have been achieved. The work of the assistants, paid and honorary, is specifically mentioned, not forgetting the gardener and the flowerbeds. Various societies meet in the museum, and their work is carefully placed on record, *e.g.*, the Geological Club notes that "Material for a monograph is already in readiness for publication." The largest attendance during any day was 141, and the smallest was 29.

Correspondence.

THE WESTERN AUSTRALIAN MUSEUM AND ART GALLERY,
PERTH, WESTERN AUSTRALIA, 24TH FEBRUARY, 1902.

To the Editor, *Museums Journal*

Sir,—In a letter by Ronald Gray, published by you in the January number, it is stated that he had been told that the paintings selected by Mr. George Clausen for the Western Australian Art Gallery did not give satisfaction. I have not the slightest idea as to who Mr. Ronald Gray may be, nor who can have made such a misstatement to him about these paintings, for they have given great satisfaction; having been selected in a truly catholic spirit by Mr. Clausen, and are not all what Mr. Gray would seem to imply in his eagerness to attack the Royal Academy and the Royal Academicians

I am, Sir, your obedient servant,

BERNARD H. WOODWARD,
Director.

THE MUSEUM, PERTH, WESTERN AUSTRALIA, 24.2.2.

To the Editor, *Museums Journal*.

A foreigner, with a peculiar name, applied for permission to make tracings of the designs on shields, womeras, kylties, bull-roarers, &c., as he had a large order from England, and he thought he could get imitations made at a much less cost than would be incurred by going round the State to collect the genuine things. I mentioned the case of Flint Jack, he said he should take risk, and that he could get tracings elsewhere. I have a number of genuine specimens that are duplicates for exchanges, and Mr. H. C. Princep, of Perth, the Protector of Aborigines, has similar things for sale.

BERNARD H. WOODWARD,
Director.

MANCHESTER MUSEUM,
THE OWENS COLLEGE, MANCHESTER.

To the Editor, *Museums Journal*.

Sir,—I was shewing the journal the other day to an energetic Board School teacher, who asked me the question whether the word *Museums* in the title was a noun or an adjective. I replied, "A noun, of course"; to which my interrogator rejoined, "Then why is there no apostrophe before the s, if it refers to the museum in the abstract, or after the s, if it refers to the general body of museums?" "Well, then," I said, "it must be an adjective." "In that case," continued my persecutor, "it is ungrammatical, for adjectives do not take the plural form in English." I succeeded in getting rid of the intruder by promising to write to the editor and enquire, which I have now done.

Yours faithfully,

SUBSCRIBER.

[The title was the product of too many learned godfathers. The editor strongly protested against it.—ED.]

EXCHANGE AND SALE COLUMN.

Advertisements for museum specimens, books, fittings, or appliances can be inserted in this column. Sixpence for the first ten words, and threepence for every ten words afterwards.

C. GUNDLACH & MÜLLER, **OTTENSEN, Near HAMBURG, GERMANY.**

Manufacturers of all kinds of GLASS JARS for Museum purposes especially,
SQUARE JARS with Ground Glass Covers and Polished Face.
CYLINDRICAL JARS with Stoppers or Corks, etc., etc.

ALL ORDERS WILL BE PROMPTLY EXECUTED. FIRST-RATE REFERENCES ON APPLICATION.

C. GUNDLACH & MÜLLER.

FRANK SUTER & Co., Ltd.,

.. Electrical Engineers, ..

Designers and Manufacturers of Electric
Light Fittings.

SPECIALITY :

Picture and Museum Case Lighting . .

.. By Suter's Registered Reflectors.

FRANK SUTER & CO., Ltd.,

66, BERNERS STREET,

.. LONDON, W.

Marine Biological Association of the United Kingdom.

Specimens of MARINE ANIMALS and PLANTS specially preserved for
Museum purposes. For detailed Lists and Prices apply to

THE DIRECTOR, BIOLOGICAL LABORATORY, PLYMOUTH.

ONS, Ltd., ESTAB.
1846.
LONDON, E.C.
Exhibition or Private Collections.

**BRACKETS,
SES.**

cket J.

Standard Bars
Quality and Finish.

Sizes are stocked :—
IRON, BRONZED.

30	12 inch.
2/3	2/9 each
21	21 inch.
6/6	8/6 each.

IRON (Warranted)

10	12 inch.
1/6	1/9 each.
21	24 inch.
4/6	5/6 each.

SEASES.

earnestly solicited to
sell for many purposes,
compulsory. We quote
FULL VALUE. Packing
condition, carriage paid.

L TAPPED BAR; Brass, Bronzed, 1/- per foot

not less than 4 feet.
Drop Doors
DID VALUE, gin. high
oveable: Trays.

35/- per foot.
30/-
25/-
22/6



3314.—Useful cabinet for private
collectors or Duplicate Specimens.
Light wood covered cloth brass handles.
15 by 12 by 8 (4 drawers) 16/6
18 by 15 by 20 (5 drawers) 21/-
20 by 18 by 12 (6 drawers) 25/-
34 by 20 by 16 (8 drawers), 30/-

Ltd., ESTD. 1846.
LONDON, E.C.
 for Public or Private Collections.

DIMENSIONS.

Total height, 6ft. 3in. (excluding ornamental iron cresting and finials).

Table Height, 2ft. 9in. depth, 4ft. 6in.

Total height of Show Case (excluding cresting), 5ft. 6in.

Height of upper part of Show Case, 2ft. 1 1/2 in.

Depth of upper part of Show Cases, 14 in.

The lower portion of Show Case measures at its highest 15 in., and at its lowest 9 in.

Bottom of Case is covered with Claret or Blue coloured Cloth. The under part of table is fitted with Drawers, three in height and length, according to dimensions of Case. All Sashes are made on the "air-tight" principle and Glazed Plate Glass.

7ft. by 4ft. 6in. by 6ft. 3in., 18 Drawers, **£66 10/-**

9ft. by 4ft. 6in. by 6ft. 24 Drawers, **£78 10/-**

12ft. by 4ft. 6in. by 6ft. 30 Drawers, **£95**

If delivered outside London, an extra charge is made for packing, according to size, varying from £3 upwards.



Mahogany Plate-Glass Case.

It is all round and top, carved pedimented with one full-sized plate-glass bar and brackets. Splendid for room.

B Quality,
 Depth, A Quality, without pediment fittings.
 air-tight. ment or inside fittings.

24	£15 5 0	£9 17 6
24	18 10 0	12 15 0
30	21 15 0	15 10 0
30	25 0 0	18 10 0

For above, 37/6, 57/6 & 72/6 extra.
 Cases made for all purposes—any estimates and drawings supplied on application.

BOTANICAL SPECIMENS

FOR MUSEUMS.

CONES OF RARE CONIFERS.
INFLORESCENCES OF CYCADS,
CYCAS, ZAMIA, MACROZAMIA,
CERATZAMIA, STANGERIA, ENCEPHALARTOS, &c,
MALE AND FEMALE.

SECTIONS OF BRITISH AND OTHER TIMBERS.
SPECIMENS FROM THE TROPICS.
SPECIMENS IN ALCOHOL and other media.

Models of British Fungi.

ECOLOGICAL SPECIMENS.

ANATOMICAL SPECIMENS.

HERBARIUM SPECIMENS.

Insectivorous and Parasitic Plants.
SETS ILLUSTRATING ECONOMIC PRODUCTS.
PATHOLOGICAL SPECIMENS.
FOR PARTICULARS SEND FOR SPECIAL PRICE LIST.

J. BACKHOUSE & SON, LIMITED,

THE NURSERIES (Scientific Department,)

Telegrams: "BACKHOUSE, YORK
'Scientific.'"

YORK.

W. D. WEBSTER,

Home Court, 24, Palace Road, Streatham Hill,
... LONDON. ...

COLLECTOR OF ETHNOGRAPHICAL SPECIMENS,
EUROPEAN AND EASTERN ARMS AND ARMOUR,
PREHISTORIC AND OTHER ANTIQUITIES.

Telegraphic Address: "ETHNICALLY, LONDON."

ILLUSTRATED CATALOGUE published every three months. Each copy contains 20 plates reproduced from photographs, and is subscribed to by all the principal Museums in the world. Subscription 10/- per year, post free, payable in advance.

A few bound Catalogues can still be obtained at the following prices :—

Vol. 1	contains Catalogues	Nos. 1 to 10	- -	30/-
Vol. 2	ditto	Nos. 11 to 17	- -	20/-
Vol. 3	ditto	Nos. 18 to 23	- -	25/-
Vol. 4	ditto	Nos. 24 to 27	- -	25/-

The Collection consists of over 10,000 specimens from all parts of the world, any of which will be sent on approval on carriage being paid.

SPECIMENS BOUGHT OR EXCHANGED.

EVERY MUSEUM SHOULD HAVE

A HEALTH SECTION

BECAUSE IT IS IMPORTANT, PRACTICAL AND INTERESTING
'F DESIGNED ON POPULAR AND PROPER LINES.

Advice and Help on this Subject can be obtained by application to

THE HYGIENIC REFERENDUM,
FERRESTONE ROAD, HORNSEY, N.

Photographs of
Familiar Trees
Plants & Flowers

in their SUMMER and WINTER appearance, with enlarged views of their bark, leaves, flowers and fruit, showing details of structure and growth.

MAY BE SEEN at the British Museum; Royal Art Library, South Kensington; University College, London; University College, Liverpool; Museum of Science and Art, Edinburgh; &c., &c. Lists on application.

HENRY IRVING, The Rowans, HORLEY, SURREY.

MUSEUMS ASSOCIATION.

President :

WILLIAM TURNER, K.C.B., B.SC., F.R.S., D.C.L., L.L.D.

Treasurer :

Alderman W. H. BRITTAIN, J.P., F.R.G.S. (Sheffield).

Hon. General Secretary :

E. HOWARTH, Museum, Sheffield.

The object of the Association shall be the promotion of better and more systematic working of Museums throughout the Kingdom. In order to promote a better knowledge of Museums, the Association shall meet in a different town each succeeding year.

That each Museum contributing not less than one guinea a year be a Member of the Association, and that individuals interested in scientific work be admitted as Associates on payment of 10s. 6d. annually.

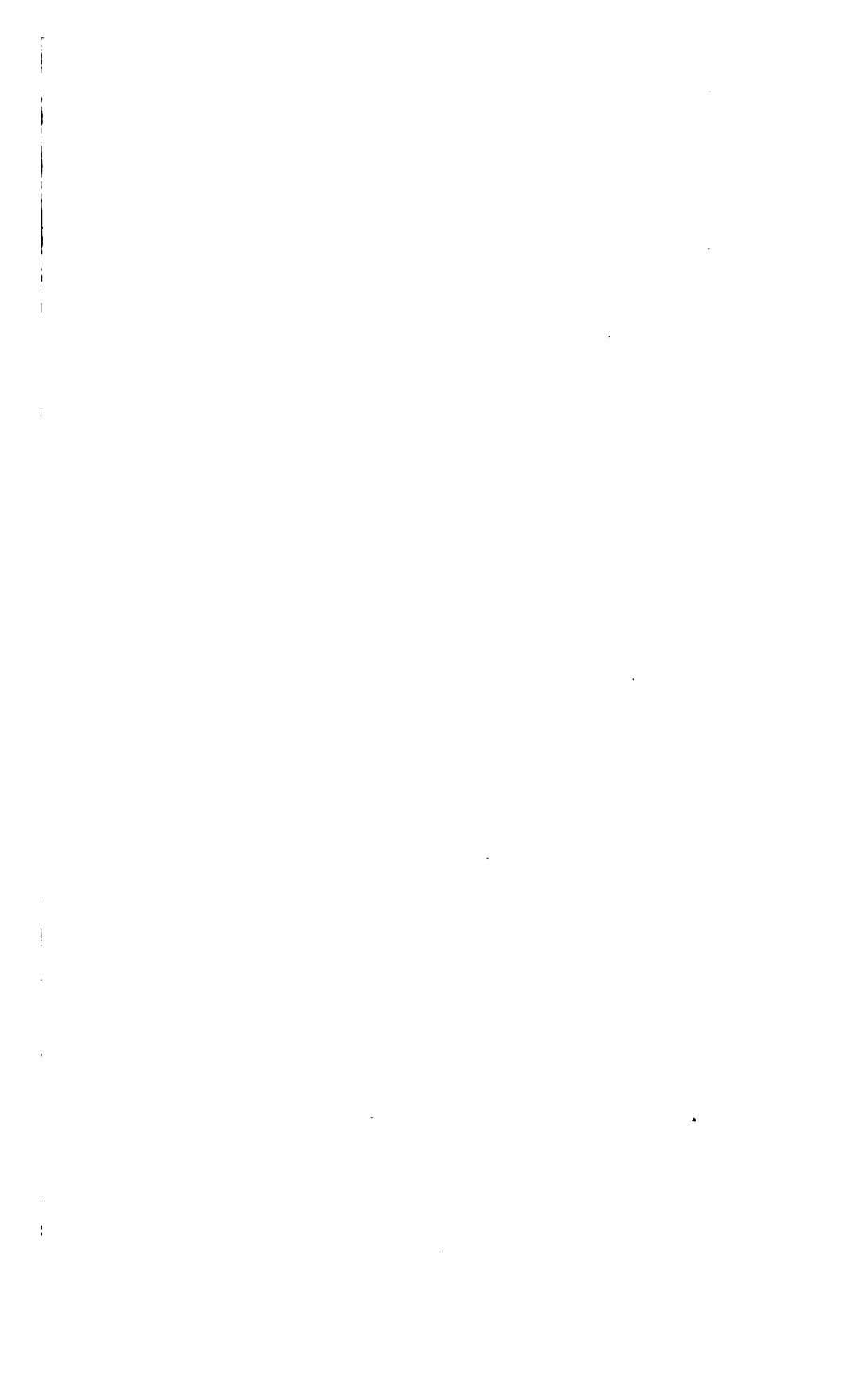
That each Museum be represented by three delegates, each having one vote. Each Associate to have one vote.

That each Museum belonging to the Association and each Associate receive one copy of the publications of the Association.

That a General Meeting of the Association be held annually, for the transaction of business, the reading of papers, and the discussion of matters relating to Museums.

MUSEUMS ASSOCIATION.

Some of the earlier volumes of the Report are nearly out of print, and Museums requiring complete sets should order them at once. Particulars can be obtained from the Secretary, Museum, Sheffield.



MUSEUMS ASSOCIATION.

President :

WILLIAM TURNER, K.C.B., B.SC., F.R.S., D.C.L., L.L.D.

Treasurer :

Alderman W. H. BRITTAIN, J.P., F.R.G.S. (Sheffield).

Hon. General Secretary :

E. HOWARTH, Museum, Sheffield.

The object of the Association shall be the promotion of better and more systematic working of Museums throughout the Kingdom. In order to promote a better knowledge of Museums, the Association shall meet in a different town each succeeding year.

That each Museum contributing not less than one guinea a year be a Member of the Association, and that individuals interested in scientific work be admitted as Associates on payment of 10s. 6d. annually.

That each Museum be represented by three delegates, each having one vote. Each Associate to have one vote.

That each Museum belonging to the Association and each Associate receive one copy of the publications of the Association.

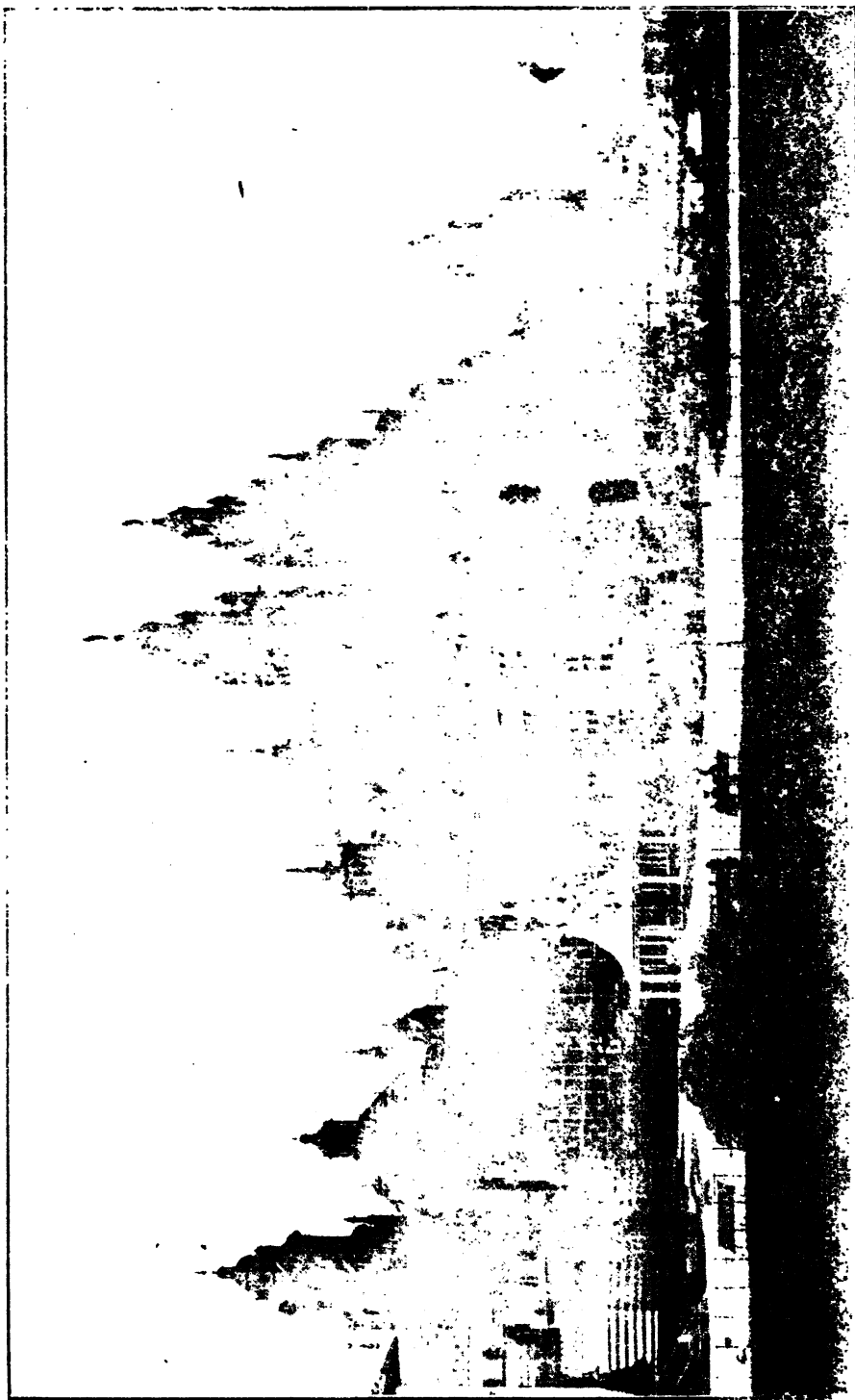
That a General Meeting of the Association be held annually, for the transaction of business, the reading of papers, and the discussion of matters relating to Museums.

MUSEUMS ASSOCIATION.

Some of the earlier volumes of the Report are nearly out of print, and Museums requiring complete sets should order them at once. Particulars can be obtained from the Secretary, Museum, Sheffield.

1

THE thirteenth annual meeting of the Bradford Association was held on the 14th of that month, under the presidency of Mr. B. Priestly, J.P. The vice-presidents were Mr. Bradford (Wm. C. Lupton, Esq.) and Mr. J. Godwin, J.P., Mr. T. Dawson, J.P., and the association; Mr. Wm. West, Esq., Mr. E. Fawcett, Mr. J. E. Wood, Esq., and Mr. Butler Wood, librarian. Mr. J. Godwin, J.P., was the secretary. The meeting was held in the town hall, by kind invitation of the Corporation. The new museum, at the corner of the course of erection, will be ready for the meeting, but it is expected that the Association will be able to enable members to use it. In addition to visits to the various institutions in Bradford, the Association, a geological excursion to some place in the neighbourhood of Bolton Abbey and woods. fuller particulars will shortly be published by the associates.



Museums Association.

THE thirteenth annual meeting and conference will be held in Bradford in the second week of July, beginning on the 14th of that month, under the presidency of Mr. William E. B. Priestly, J.P. The vice-presidents will be the mayor of Bradford (Wm. C. Lupton, Esq.); Alderman J. S. Toothill, chairman, libraries and art gallery committee; Mr. J. Arthur Godwin, J.P., Mr. T. Pawson, president Bradford scientific association; Mr. Wm. West, F.L.S.; Mr. E. Naylor, Mr. J. E. Fawcett, Mr. J. E. Wilson, and Dr. James Monckman. Mr. Butler Wood, library and art gallery, Bradford, is local secretary. The meetings will be held in the council chamber in the town hall, by kind permission of the mayor and corporation. The new museum and art gallery building, which is in course of erection, will not be completed at the time of the meeting, but it is expected that it will be sufficiently advanced to enable members to understand the plan and arrangement of it. In addition to visits to the technical school and to other institutions in Bradford likely to interest members of the association, a geological excursion will probably be arranged to some place in the neighbourhood, as well as an excursion to Bolton Abbey and woods. A notice of the meeting giving fuller particulars will shortly be issued to members and associates.

Glasgow Art Gallery and Museum, Kelvingrove.

THE history of the art gallery and museum institutions of Glasgow up to 1896 was recounted in some detail in the Report of the Museums Association for that year. In the Glasgow presidential address it was stated that the great international exhibition of 1888 was projected with the primary expectation that the undertaking might prove a financial success, and with the resolve that such surplus as might accrue should be devoted to the erection of a building adequate for the rich art treasures and the scientific and technological collections the city possessed, for which such accommodation was urgently needed. That exhibition proved a commercial success even beyond the most sanguine hopes of its promoters. A balance on the right side of upwards of £46,000 remained—a substantial sum, but all too small for the erection of a building equal to the requirements of the city. The exhibition association in due course was dissolved; but out of its *disjecta membra* sprang a new association, the main purpose of which was to guard this substantial surplus and to secure by subscription additional funds sufficient for the erection of an adequate structure. Through the activities of this body—the “association for the promotion of art and music in the city of Glasgow”—a further sum of upwards of £70,000 was collected, and with these considerable resources the association considered itself warranted in promoting an architectural competition, and in obtaining plans for the erection of the Glasgow Art Gallery and Museum on a site in Kelvingrove Park. Under the guidance of Mr. Alfred Waterhouse, R.A., the plans selected for the building were those of Messrs. J. W. Simpson and Milner Allen, of London; and in the summer of 1893 the contracts for the basement section of the building were concluded. On the completion of this portion of the work the voluntary association found itself in the awkward position of having undertaken a task to complete which was obviously far beyond its powers and resources. Its intention had been to carry out the work and

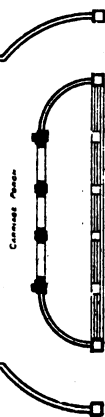
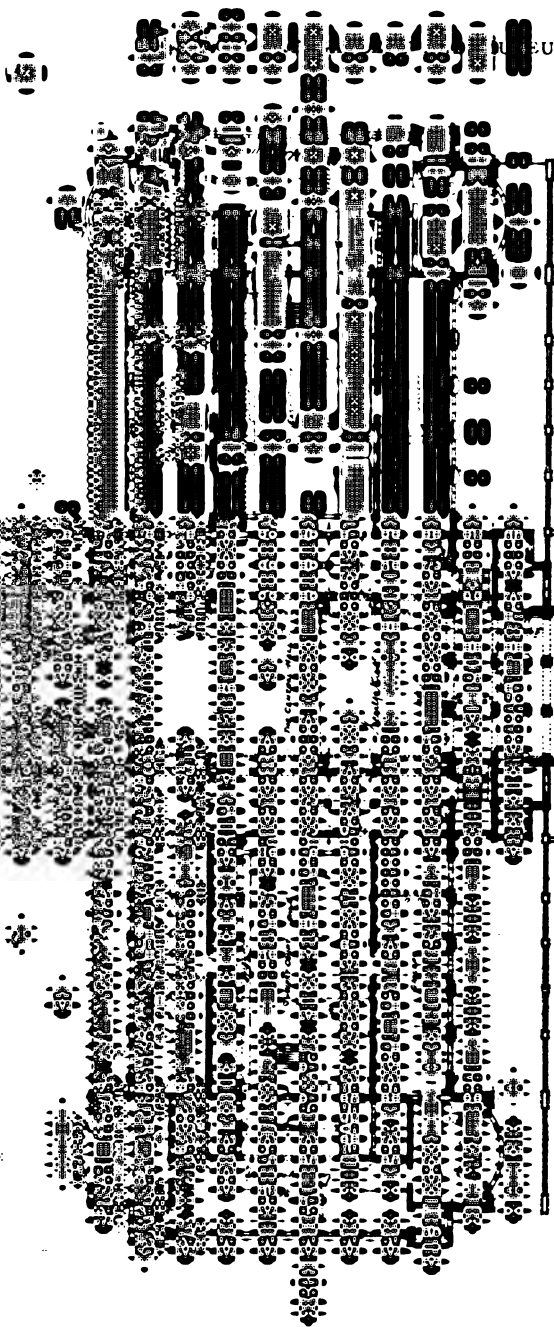
deliver to the Corporation of Glasgow a complete building, but even on the most modest estimate it was found that at least £27,000 beyond the funds at the disposal of the association would be required to complete the work, whilst to carry it out in a sufficient manner £70,000 more would require to be expended. In these circumstances the association asked the corporation to relieve it of its obligations, to take over the assets, and to carry on and complete the building as a corporation scheme. Up to this point the municipality had undertaken no responsibility in the work, further than sanctioning and encouraging the action of the association, and granting the site for the building, which was to be handed over to them. Henceforth the work was carried on entirely under municipal control, and the association for the promotion of art and music ceased to exist.

It was at this stage that the meeting of the Museums Association was held in Glasgow, and the members had then an opportunity of seeing the position and bounds of the structure as laid out in the lines of the basement then completed. From that time the work was prosecuted vigorously under the supervision of the corporation. Its structural and architectural requirements were met in the most generous spirit; internally, worked stone, walnut and teak finishing were substituted for plaster and pine; and externally, a most elaborate scheme of sculpture and carved decoration was sanctioned. The result was that a building originally devised to be built for not more than £120,000 will in the end be found to cost considerably more than double that amount, but Glasgow can boast of having the most handsome and architecturally ornate museum building of any provincial town in the United Kingdom, if not in the whole world.

Whilst the erection was in progress it was borne in upon the museums and galleries committee of the corporation that the institution might be suitably inaugurated with the holding of another great international exhibition, in which the structure itself might occupy a leading position. The gratifying success of the previous exhibition encouraged the municipal authorities to hope that such an appropriate inauguration of their

institution would again result in such a financial success as would materially benefit their undertaking. Accordingly, early in 1897, the museums and galleries committee resolved to recommend to the town council that in connection with the inauguration of the new museum and art galleries building an international exhibition should be held in Glasgow during the year 1901. That proposal received the unanimous support of the town council, and among the conditions under which the venture was to be conducted it was stipulated "that if any surplus accrues from the exhibition it should be handed over to the corporation to be applied for the promotion of art and science under their charge."

The exhibition being thus agreed upon, it became a matter of vital importance that the permanent building should be ready in sufficient time to be an integral part of the exhibition scheme. It was agreed that for exhibition purposes the halls and galleries of the new building should be devoted to a loan collection of pictures, drawings, and sculpture of the 19th century, to architectural works, pictorial photography, a general collection of decorative art, with a section for contemporary arts and crafts, and a collection illustrative of the archæology and history of Scotland. At a late period it was further agreed to add a small collection of select works of old masters, more for the decoration of two large apartments than with a view to any exhaustive collection of early art. A general fine art and Scottish archæology committee was appointed, from which special sub-committees for the various sections were selected, and under the general secretaryship of the writer the work was carried on. It was only with the utmost difficulty, and at later than the last moment, that access to and control of the building were obtained by the fine art committee. But under circumstances of much difficulty the task of the committee was accomplished, and the museums association had, during their Edinburgh meeting, an official opportunity of seeing the building and its contents. As to the financial result of the undertaking, many very sanguine estimates have been formed, but at this juncture it can only be safe to say that these will be much more favourable than even the highly successful exhibition of 1888.



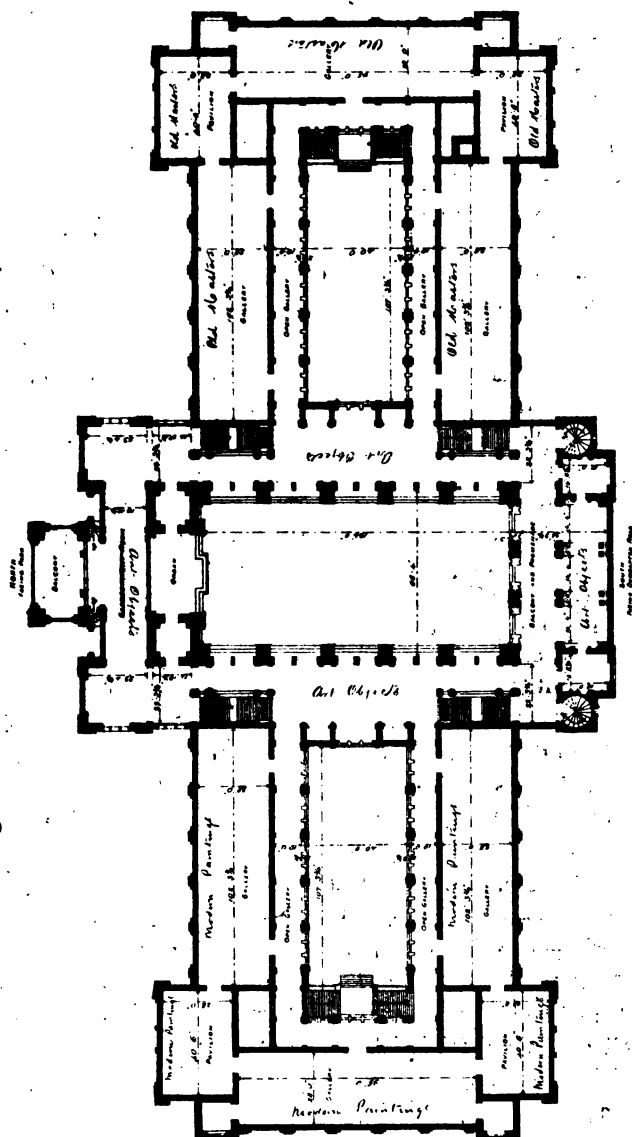
Ground Floor Plan



The building as now finished is a highly original and ornate structure conceived in the spirit of the French Renaissance architecture. It has a total length of 448 feet, and is 256 feet wide, with frontages, porches, and entrances of equal importance on both north and south façades. In outline it is very varied, having at each corner cupola-mounted pavilions which rise to a height of 104 feet. The roof of the central hall rises high above the general level, and over its north porch, as well as flanking both sides, are towers, the loftiest of which reach a height of 172 feet. Surmounting and terminating the north porch tower is a bronze figure of Victory, while the flanking towers are finished with figures emblematical of Immortality and Fame. The main and most important sculpture group, the work of Mr. George Frampton, R.A., is planted within an open arch in the centre of the north porch, and appropriately represents St. Mungo—the patron saint of Glasgow—protecting art and music typified by female figures to the right and left of the saint—a powerful figure of a mediæval ecclesiastic. Sculpture and ornamental carving are, indeed, prominent characteristics of the building both without and within. On the piers between the windows are festooned panels bearing the names of the greatest artists—painters, sculptors, and architects—of all times. In the arched panels above the windows are elaborate coats of arms for all the Scottish counties, and within the building there are panels, &c., for the various incorporated trades of Glasgow, and for the names of men of all countries eminent in music, history, science, and industry.

The interior, as will be manifest from the ground plans, is laid out in an eminently simple manner and on lines of the strictest bilateral symmetry. The great hall, with spacious north and south vestibules, forms the central feature of the building. The hall is a very striking structure, 125 feet in length by 56 feet in width, rising to a height of 80 feet. It is richly finished in a fine cream-coloured sandstone, which, with its abundant carved surfaces, its numerous pillared archways and elegant balconies, its lofty clerestory windows, and its floor of variegated white, black, and yellow marbles, at the first glance captivates the observer. Within a spacious

Glasgow Art Galleries.



First Floor Plan

arched chamber on the upper floor level in the north side of the hall, a great organ has been erected, the notes of which may be heard not only in the central hall but throughout the entire building.

Two spacious courts, roof lighted, to right and left of the central hall, are reached by arcaded passages. These courts measure 102 feet in length by 60 feet in width, and are finished in sandstone with arcades and marble floors, the same as the great hall. Around these on three sides are galleries, lighted by side windows, 102 feet in length by 28 feet in width, and each corner of the building is formed into a pavilion about 40 feet square, with a subsidiary entrance at its external angle.

The upper floor is reached by six staircases, two to the right and left of the north and south vestibules, and one at the extremity of each court. The galleries correspond in size and disposition with the saloons under them on the ground floor. There are thus six long galleries, four pavilions, and, occupying the space over the subsidiary entrances in the extreme angles, four small apartments. The galleries and pavilions are roof-lighted. Besides communicating with each other internally, they are also reached by a wide arcaded corridor which passes round the three sides of the courts. These corridors run into a broad balcony which extends around the central hall. To the north passing behind the organ loft it widens over the north vestibule and porch, and similarly on the south side it extends over the south vestibule and entrance. A third floor hall over the south vestibule is reached by two lateral circular staircases. This floor is not shown on the ground plans.

The basement affords ample storage accommodation, with workshops and a range of offices. In it also are the heating and ventilating appliances, while an electric elevator communicates with the ground floor and upper galleries. In a second well a mechanical hoist has been installed for dealing with weights too great for the elevator.

The heating and ventilating of the building is effected on what is termed the plenum system by plant supplied by the Sturtevant Engineering Co. Under this system the cold air

from an inlet shaft is drawn in by an electrically driven enclosed fan. The air is washed by passing through a corrugated filter, fitted with water flushing and spraying arrangement. It is then, for heating, passed through steam-heated coils, and delivered into the main basement flues, whence by means of ducts built in the walls it is delivered into the various halls, corridors, and apartments of the building. It is unnecessary here to describe the boilers, steam economisers, electric motors, and fans concerned in the purifying, heating, and distribution of the air supply. It is sufficient to say that duplicate heating and ventilating fan apparatus are supplied, one set serving the east and another the west portions of the building. Each fan is driven by a thirty-brake horse-power motor, working at 500 volts and making up to 670 revolutions per minute. The fan running from this power at 120 revolutions per minute delivers upwards of 5,000,000 cubic feet of washed and heated air per hour. There is no difficulty in maintaining a regulated temperature in the cold season, and in summer the drawing-in and washing of the air suffices to cool it at least about 4 deg. under the external temperature.

The vast and valuable loan collections which occupied the building during the period of the international exhibition were distributed to the various quarters of the globe by the new year, and then it became necessary to deal with the installation of the permanent collections for which the structure was devised. A report on that subject and a scheme of classification was drawn up and approved of by the corporation. Its main features are as follows:—

The collections which have to be dealt with may be classified under the following general heads:

- I. Fine Arts.
- II. Industrial Arts.
- III. Natural History.

These, taken together, form the basis of an institution so comprehensive as to embrace illustrations of every phase of art, science, and industry which can be represented in a museum.

Under these general heads, there are numerous subdivisions which must be taken into account for classification of the collections, and for arrangement and the apportionment of space to be devoted to such divisions. And in this apportionment of space it is not sufficient merely to keep in view the art treasures and the specimens of industrial products and of natural history at present available for the equipment of the institution. Regard must be had to the relative importance of the various sections for the objects of the institution, and to the facility with which the several divisions can be developed so as to reach something like adequate fullness.

The plan and construction of the building itself suggests the general allocation of space to the three great divisions.

The upper floor falls to be occupied with the fine art department, excepting the division of sculpture, to which a portion at least of the central hall must be devoted. The east wing of the ground floor must be given over to natural history, and the corresponding west wing remains for the technological and archæological departments.

When the requirements of these several divisions are considered, we are forced to the conclusion that for collections so varied and comprehensive the available space within the structure is exceedingly limited. In consequence, it will be necessary to select specimens for exhibition with very great care, and with a rigid regard to their high value as works of art, to their significance in the applied arts, and to their teaching value in natural history.

Fine Art Division.—Taking into account only the collections at present owned by the corporation, the classification of the works in the picture galleries would be as follows:—

I. Early Pictures—

- (a) Italian.
- (b) Flemish.
- (c) Dutch.
- (d) French, German, Spanish.

II. Modern Works—

- (a) Oil Paintings—British.
- (b) Do. Foreign.
- (c) Portraits.

III. Water Colour Drawings.

IV. Special Collections.

V. Drawings, Prints, Photographs, and other reproductions.

Special collections include works given or bequeathed under conditions which require such to be kept apart and exhibited by themselves.

The balconies of the upper floor around the grand hall and over the north and south entrances afford space for the collections of applied art, which include—

Carvings in Ivory, Wood, and other materials.

Metal Work.

Pottery.

Glass.

Textiles.

Lace and Embroidery, &c.

The technological collections embrace numerous and varied classes of objects which require minute classification and arrangement to develop their significance and usefulness. They include—

I. Raw Products of Commerce—

Mineral.

Animal.

Vegetable.

II. Manufacturing Processes and Products—

Agriculture and Food.

Metallurgy and Metals.

Chemical Industries.

III. Mechanical Arts—

(a) Engineering.

(b) Shipbuilding.

(c) Architectural Works.

For the archæological collections accommodation should be provided in the west wing, as in that side the series of heavy casts of sculptured stones is already installed. These may be treated as a distinct division, to be classified thus—

I. General Archæology.

II. Local Antiquities and Memorials of Glasgow.

The east wing, devoted to the natural history side of the institution, has to afford accommodation for—

- I. Zoology.
- II. Ethnology.
- III. Geology and Palæontology.
- IV. Mineralogy.

In arranging natural history collections, careful classification on a scientific basis is of the utmost importance, and in this connection it is unfortunate that the disposition of the available accommodation will not permit of a strict sequence being observed. The space is not only much divided, but for the requirements of the subject it is also extremely restricted. The open court is the most convenient portion for a mammalian collection. One saloon then would alone remain for the lower vertebrates and for all the invertebrates. A pavilion should be devoted to British and local natural history, leaving a saloon for ethnography or the natural history of man, and a saloon for geology and palæontology, with a pavilion for mineralogy.

On such a basis the organisation of the institution is now being pushed forward, and it is hoped that before many months pass the public may be in full enjoyment of the Glasgow Art Gallery and Museum.

J. P.

Some South African Museums.

By E. W. SWANTON.

Curator to the Haslemere Educational Museum.

DURING the past winter, whilst travelling in South Africa—with Professor Jonathan Hutchinson, F.R.S., who was investigating the leprosy problem—I visited the museums of Cape Town, Durban, and Pietermaritzburg, and jotted down some general notes upon them.

The Cape Town museum adjoins the handsome Government Avenue. It overlooks the botanic gardens, and is close to the very fine public library. It is a new building of imposing exterior (two-storied with portico and tower), fronted by a considerable lawn. It cost £19,000, and was opened on April 13th, 1897. The Cape Government contributes £1,000 annually towards its maintenance.

I confess to being much disappointed with the plan and arrangements of this museum, which is destined to be the reference museum for South Africa. It seems to have been built upon the plan of an ordinary dwelling-house, perhaps with the idea that some day, when the collections have outgrown the limited space, of letting it as a "comfortable villa," and of building another museum. The whole available space for exhibition purposes consists of four rooms below and three rooms and a gallery above; an arrangement which at once does away with systematic grouping of the specimens in separate galleries; and we find reptiles, fishes, and birds jumbled together in one room.

There are large upright cases, with plate-glass doors, occupying the centre of both the largest rooms above. These directly face the windows, and the cross light is very disagreeable. The walls of the entrance-hall and staircase are ornamented with a considerable variety of skulls, horns, and antlers. I may here digress to remark that skulls and horns of African mammals, which may be "picked up" at Stevens' auction rooms for a few shillings, command a high price at the curio shops in Natal, as well as Cape Colony; e.g., a giraffe skull will fetch £10. I was told they were in demand

by wealthy residents at Johannesburg and Pretoria, who sometimes bought them, not only for purely ornamental purposes, but to proudly exhibit as trophies of the chase.

The centre of the hall is occupied by a skull of a female Southern Right whale (*Balena australis*), which was harpooned in False Bay in July, 1892. The label states that "Whales are frequently seen in Table and False Bay, and are an object of pursuit to several well-equipped whale-boats stationed at Green Point and Woodstock in Table Bay, and at Kalk Bay and Simonstown in False Bay. Other species than this are often hunted, but the present one is far the most valuable, owing to its possessing so much more whalebone. The value of a good whale, blubber and bone, often amounts to upwards of £900."

The baleen plates are all missing, and the label would certainly lead the unscientific to think that the huge whale's bones before them were valuable, there being no allusion to the baleen as being the valuable "whalebone" so called. Neither is there a piece of baleen on view near to this exhibit.

The two rooms on the right of the hall contain the geological and mineralogical collections, including those collected up to the present by the South African Geological Survey. These are well arranged, for the most part in table-cases. With the exception of a few illustrations of the mastodon, mammoth, &c., and a small portrait of Andrew Geddes Bain, the "father of South African geology," who died in 1863, the walls are bare, consequently these rooms present a very unfinished appearance. Maps and diagrams might with advantage be hung on the wall spaces. At the Maritzburg Museum I was much interested in two hand-coloured geological maps, one a sectional drawing of Table Mountain, the other of the country between the Giants' Castle in the Drakensburg and the Umkomansi River in Natal. Surely a copy of the former, at least, as of exceptional interest to local students, might be placed in one of these rooms.

The smaller of the two rooms on the left of the hall contains specimens of pottery, china, &c., with an extensive series of gold and other ornaments discovered in the ruined buildings at Zimbabwe, Mashonaland. There are also several inscribed

post-office and other stones of the sixteenth century, used by passing mariners. Perhaps the object of greatest interest to South African antiquaries is part of the memorial pillar set up by Bartholomew Dias, near Angra Pequena, in 1486.

The larger room contains the invertebrate collection, arranged in five table-cases and one large wall-case. The remainder of the wall space—on which maps, diagrams, &c., referring to the exhibits could be placed—remains empty. The gallery surrounding the staircase contains part of the collection of mammals, the remainder occupying a large adjoining room. It is at once evident that this fine collection is much better arranged and labelled than any other of the museum exhibits.

There is a not very good specimen of a giraffe standing at the top of the stairs; but no skeleton of this animal as yet finds a place in the museum, which is regrettable.

The hippopotamus skulls do not show the orbital bullæ, consequently for educational purposes their value is considerably lessened. I saw a fine skull in which the bullæ were well preserved in one of the many curio shops of the city.

I give an example of the style of label in use for the mamma'ia :—

ANTHROPITHECUS GORILLA.

THE GORILLA.

WEST AFRICA.

PURCHASED.

This skeleton is that of a quite adult male, and is placed by the side of the human skeleton for comparison.

The chief differences are :—

1. The generally heavier character of all the bones.
2. The presence of the stout ridges on the skull and over the eyes, for the attachment of the muscles.
3. The great size of the canine teeth.
4. The absence of a bony projection to the lower jaw, *i.e.*, a chin.
5. The length of the arms, reaching, even when the animal is standing upright, to half way between the knees and heels.
6. The shortness of the great toe as compared to the others, and also its much greater prehensibility.

A small room over the entrance-hall contains the ethnological collection. There is an extensive series of native weapons and implements from various parts of Africa; these are, however, very inadequately labelled. The most valuable

exhibit is a complete skeleton of a Bushman, exhumed from the floor of a cave near the mouth of the Touw River, on the coast of George District, in the year 1892.

The remaining room contains a heterogeneous collection of mammals, birds, reptiles and batrachians (living and dead), and fishes. Of course, in a small provincial museum such overcrowding is too often unavoidable, but I was surprised to see it in the Cape Government Museum. The very large glass cases are perhaps rather too deep, for when, as is here the case, half a dozen birds of different species are placed one in front of the other, it becomes an exceedingly difficult matter to read the label attached to those at the back of the case.

The museum at Durban consists of a single room on the upper floor of the Town Hall. It is about 120 feet long and 30 feet wide, and is much overcrowded. The corporation has recently decided to build a new one. In the meantime, the collection of mammalia—an extensive one—is rapidly getting into a very bad condition. The greater part is not contained in glass cases, but stands on the floor in a corner of the room, roped off from the public. The hot and very moist air is having a serious effect upon them; and, to judge from appearances, if the museum authorities do not take immediate measures towards placing them all in sealed cases, the whole will be irretrievably ruined.

There are a few bones of the *Æpyornis*, with some fragments of shell. A perfect egg of this bird was recently sold in Durban by a Malagasi for the paltry sum of £10.

Famous as the Durban coast is for its shells, I was disappointed in not finding a well labelled and exclusively local series on view, but there was an extensive mixed collection. I would submit that local collections should be allowed a special place in the smaller museums. A well-arranged collection of local marine shells is a desideratum in all coast-town museums. Knowing that full information may be obtained at the museum, young people will be led into taking more than a passing interest in the shells that they constantly see in their rambles on the beach. If a vivarium could be fitted up in a side room, so much the better. The only attempt that I saw in this direction was at the Cape Town Museum, where

there were two cases in one of the rooms containing living reptiles and batrachians. On the occasion of my visit, both were surrounded by an admiring group of children, but neither bore an explanatory label.

The Durban museum contains a good series of Natal fossils and minerals, but in its present overcrowded state nothing is shewn to advantage; and it must indeed be very discouraging to a curator to work in so limited a space.

In the reports of the Durban corporation for 1900 it is stated that 21,627 visitors passed through the museum during the year. I cannot say by what method of computation they arrived at these figures, but at the time of my visit there was no turnstile. Visitors could sign their names in a book if they felt so inclined.

The Maritzburg museum is even more overcrowded than that at Durban. It consists of one badly lighted room, adjoining the public reading-room. It is so greatly overcrowded in fact, that walking space is very limited. The summer heat is moist, and I was glad to note that the mammalia are preserved in large cases. Curiously, the giraffe is not represented. There is a very fine collection of Natal birds, many of which were presented by Mr. Graham Hutchinson (a nephew of Professor Jonathan Hutchinson), a well known authority on the fauna of Natal.

Mr. Graham Hutchinson also painted the fine series of facsimile sketches of Bushmen drawings, from rocks situated in the Drakensburg Range above the Bushman's River.

The conchological collection is a large one, and Mr. Burnup, the well known collector, is responsible for its arrangement. As the whole is contained in locked cabinets, it is seldom seen except by specialists.

Hitherto but little interest in scientific matters has been displayed by Maritzburg residents, but it has been quite recently decided to build a new museum at a cost of about £16,000.

There are museums at Port Elizabeth, King William's Town, Grahamstown, Bloemfontein, Johannesburg (a small geological one), and Pretoria. These I did not see. That of Grahamstown is the oldest in the country, and is said to be the best arranged.

Useful Catalogues for Students.

THE Bradford Public Library has just issued an excellent "Class List of Books in the Reference Library on Natural Science." This catalogue is the fourth of a series which is being prepared in pursuance of a scheme for the re-arrangement and cataloguing of the library, and the classification adopted is Dewey's decimal system which is slowly but surely making its way in this country. It is a pity that the blank page (page 4), was not occupied by a bird's eye view of the classification. The fullest reference is in the classified list, a system which we believe is, speaking generally, the most practical, and references are made to it from the author index and subject index. We may point out that much time would be saved if abbreviated titles were given in the former of these. The classified list with subject index is far superior to the much vaunted dictionary catalogue, and infinitely simpler to compile. Though the scheme is well conceived and the typography good, the work is not free from error in matters of detail. There is no hint that Lord Kelvin and Sir William Thomson are the same person. Dr. "Gunther" should be either "Günther" or "Guenther"; the latter is preferable in any list which has to be alphabetised. We notice with satisfaction that detailed lists are given of the contents of the reports of the Smithsonian Institution, where many valuable papers lie hidden, as well as of the British Museum Publications. In these latter, however, many items are wrongly classified. "Diatomaceae" are plants, not Protozoa; so are Mycetozoa in all probability—at any rate they are not Coelenterata, nor are Echinoderms and Blastoidea; Polyzoa (or Bryozoa) are not Mollusca, and Orbitolites is a genus far removed from the spiders. Authors' names are omitted in some cases where they might easily have been ascertained, and in such cases they do not, of course, appear in the author index. These are all small errors which could easily be corrected when the present edition is exhausted, and do not much detract from the general utility of the work, which we commend to the notice of our fellow curators who have to do with library management.

Para Museum Publications.

FROM the Museu Paraense of natural history and ethnography has been received decades 1 and 2 of a new publication bearing the title *Arboretum Amazonicum*, which is intended to deal with the trees and plants of the Amazon district, wild and cultivated, both from the botanical and utilitarian points of view. Each part, which is quarto in size, contains 10 plates reproduced from photographs showing trees singly, also in groups of forest growth, as well as flowering shrubs, two plates of the *Victoria regia*, and an illustration of the fumigation of the caoutchouc. With each plate there is a page of descriptive letter-press printed in parallel columns of Spanish and French, giving briefly the habitat of the plants figured, a general description of it, and its uses. The reproductions are excellent, and the work is likely to prove both beautiful and useful, the idea of it having originated with Dr. J. Huber, Chief of the botanical section of the museum, who has also written the descriptions of the plants.

From the same museum has been received the first fasciculus, of the Album of the birds of the Amazons, by Dr. Emilio A. Goeldi, director of the Museu Paraense, which is intended as an illustrated supplement to Dr. Goeldi's Birds of Brazil, published in Spanish. This album contains 12 coloured plates of groups of birds, each separate species having its native and scientific names printed over it on the thin sheet of protective paper attached to each plate. The figures of the birds are well drawn, though the colouring appears to be rather harsh. There can be no doubt, however, of the identity of the birds, and we shall be glad to receive the further instalments of the work.

General Notes.

AT HOME.

SIR JOHN DONNELLY.—Major-General Sir John F. D. Donnelly, who was from 1884 until 1899 secretary to the Science and Art Department, died last month at his residence at South Kensington. He was in his sixty-eighth year. Sir John Donnelly had been in the public service for over forty years. He began life in the Royal Engineers, and the year after he joined the corps he went to the Crimea, where he served with distinction, being twice mentioned in despatches, and receiving, besides the medal and the Turkish decoration, the ribbon of the Legion of Honour. In 1857 he was told off for certain duties upon grounds attached to the South Kensington Museum, and there he remained. At the end of 1859 he was gazetted back to the service, but the War Office allowed him to remain at South Kensington; and a few years later he had actually made arrangements to join his old friend Captain (afterwards General) Gordon in Egypt, and to continue his military career, when he was offered and accepted another civil appointment. He continued to work his way up the official ladder until in 1884 he was appointed secretary to the Science and Art Department. He was made a K.C.B. nine years later. When he retired the secretaryship was taken over by Sir G. W. Kekewich, in addition to the secretaryship of the Education Department. His personal popularity with the staff at the Victoria and Albert Museum was attested by the presentation made to him in December, 1899, by those with whom he had been associated, from his immediate colleagues down to the stokers and labourers employed. He retired, according to the age limit, in 1899; and to the deep regret of all who knew him, the enjoyment of his well-earned leisure has all too soon been sadly terminated.

DR. F. A. BATHER.—The principal trustees of the British Museum have appointed Dr. F. A. Bather to the assistant keepership of the geological department.

OWENS COLLEGE.—The jubilee of Owens College, which was recently celebrated, cannot be passed by without mention, especially when we consider the fact that the college includes one of our chief provincial museums. The most notable event of the celebrations was the opening of the new Whitworth Hall by the Prince of Wales, on the morning of March 12th. The Prince and Princess were met at the

entrance by the president (his grace the Duke of Devonshire, K.G.) and the principal of the college (Mr. Alfred Hopkinson), and after a formal reception by the governors and senate, the Prince, accepting a gold key from the treasurer (Alderman Thompson), declared the hall open. This new addition to the college is a very fine piece of architecture, and supplies a need which has long been felt. It is built of grey stone, and the galleries, panelling, and framework of the organ are of light oak. This wood is also used for the roof, which is one of the finest of its kind in England. A large *conversazione*, attended by some five thousand guests, was held in the evening, those present having an excellent opportunity of inspecting the whole of the college buildings. An even more interesting ceremonial took place on the next morning, when the Duke of Devonshire, supported by the governing body and the senate, received, on behalf of the college, the congratulatory addresses presented in person by distinguished representatives of various universities, colleges, and learned societies. After this part of the ceremony was over, honorary degrees were conferred by the chancellor of the university (Earl Spencer) upon a considerable number of distinguished men of science and letters, and also upon several Manchester citizens who have done good work for the cause of education. The museum world will note with interest that one of the recipients of an honorary degree was Mr. T. C. Horsfall, the founder of the Manchester Art Museum, Ancoats.

HULL NEW MUSEUM.—The ratepayers of Hull having decided to adopt the Museums and Gymnasiums Act, so far as it relates to museums, the Hull corporation property committee decided to purchase the property in the High Street known as Wilberforce House, and to apply to the Local Government Board for sanction to borrow £4,500, the amount of purchase money. It is proposed to put the historic old house in complete repair, and convert it into a museum. For many years past this birthplace of William Wilberforce has been in private hands, and has been let off as merchants' offices. In future the house will be in the hands of a responsible caretaker, and its principal rooms will be stocked with Wilberforce relics, as well as manuscripts, records, and other documents, in which the city archives are extremely rich.

WHITECHAPEL ART GALLERY.—Children in art galleries and museums are sometimes rather troublesome when older visitors are present, and the arrangement at this gallery is so well calculated to do away with any inconvenience or annoyance that it deserves imitation in other similar institutions. The gallery is open from twelve to ten, and in the two

morning hours before noon classes of children are admitted, who are taken round the gallery by the officials and the contents are explained to them. This is a much better plan, both for the children and the officials, than mixing them up with the adult visitors, who are very apt to crowd round a museum official when he is explaining pictures or specimens. And there is certainly less difficulty in talking to children only, than in discoursing to a mixed audience of all ages.

THE NATIONAL GALLERIES.—The director of the National Gallery, in his report for the year 1901, states that the gallery in Trafalgar Square was visited by 478,346 persons on the free days during the year, showing a daily average attendance on such days (204 in number) of 2,345. In addition to the above number, 35,704 persons visited the gallery on the thirty Sunday afternoons on which it was opened during 1901, showing a daily average attendance of 1,190. On students' days (Thursdays and Fridays) 42,177 persons were admitted between January 1 and December 31, 1901, the admission fees (at 6d. each) amounting to £1,054 8s. 6d., as compared with £1,179 1s. 6d. received in 1900. The National Gallery of British Art, at Millbank, was visited by 185,434 persons on the free days during the year, showing a daily average attendance on such days (206 in number) of 900. In addition to the above number, 42,015 persons visited the gallery on the 30 Sunday afternoons on which it was opened during 1901, showing a daily average attendance of 1,400. On students' days (Thursdays and Fridays) 25,821 persons were admitted between January 1 and December 31, 1901; the admission fees amounting to £645 10s. 6d., as compared with £678 9s. received in 1900. The amount annually realised by admission fees at both establishments is devoted as an "Appropriation in Aid" of the Parliamentary vote to the National Gallery. The total number of students' attendances at the gallery in Trafalgar Square on Thursdays and Fridays throughout the year was 14,866. Independently of partial studies, 629 oil colour copies of pictures were made, viz., 358 from the works of 98 old masters and 271 from the works of 40 modern painters. This shows that the leisured classes find more time to visit the National Gallery in Trafalgar Square on weekdays, while the labouring classes make larger use of Sunday for inspecting the art treasures at Millbank.

FITZWILLIAM MUSEUM.—The fifty-third annual report of the Fitzwilliam Museum has just been issued. During 1901 the principal work has been the rearrangement of the Egyptian collections, and the acquisitions include a collection of one hundred and thirty bronze medals struck during the reign of Napoleon I., presented by the master of Trinity Hall; a

collection of Egyptian antiquities, by the committee of the Egyptian Research Account; and a collection of Greek antiquities as well as a set of water-colour drawings of the colleges of Cambridge made in 1823 by the director. Among the purchases are collections of antiquities from Crete and Egypt, the latter including a fine Breccia bowl. The catalogue of pictures has been completed, and will be issued this year. The number of visitors to the Fitzwilliam Museum was 41,376, and to the museum of Classical Archæology 4,520.

NEW ART GALLERY AT LLANDUDNO.—Lord Mostyn opened a handsome art gallery at Llandudno, built by his mother, Lady Augusta Mostyn, for the development of arts and crafts within the town and neighbourhood. It is intended to use the gallery during the winter months as a polytechnic for Llandudno youths. During the summer season the gallery is the home of the annual exhibition of the Gwynedd Ladies' Art Society, of which Lady Augusta Mostyn is president.

DECEPTIVE EYES.—When Professor E. Ray Lankester was describing the natural history of the Okapi at the Royal Institution, he gave a delightful instance of the dangers of a little learning. After the skin, which was sent over by Sir Harry Johnston, had been mounted, and exhibited at the Natural History Museum, there was an article in a leading daily paper giving an interesting account of the new animal, and speculating in a very feeling way upon its disposition as shown by the expression of its eye. The organ in question, said Mr. Lankester dryly, was supplied by Mr. Rowland Ward, who alone was responsible for the expression it conveyed.

MINERAL CATALOGUE.—A quarto catalogue of 110 pages of the minerals in the West Ham Technical Institute, London, has been issued, and it is arranged so that it could be cut up for labelling minerals in museums generally. The classification is based on that of Klockman, the names of the minerals being clearly printed in Roman capitals. Each opening of two opposite pages is divided into ten columns, which contain (1) consecutive numbers of the species in each class; (2) name and chemical composition of the mineral; (3) crystallographic system, synonyms and varieties; (4) isomorphic groupings; (5) colour; (6) names of other minerals most like it; (7) associated minerals; (8) hardness and specific gravity. The catalogue would be still more useful if a table of contents giving the names of the classes and divisions were added, and also an alphabetical index.

GREAT AUK.—At a sale at Stevens' auction rooms, London, last month an egg of *Æpyornis maximus*, over a foot long, and white in colour, was sold for 40 guineas. At the same sale a

stuffed specimen of the great auk went for 300 guineas, and an egg of the great auk realised 240 guineas. These were from the collection formed by the late Mr. P. Crowley, F.Z.S., and appear all to have passed into the hands of private collectors.

A CURIOUS COMPLAINT.—A surprising piece of intelligence, the result of mixing up two paragraphs, has just been provided in the daily press. "The public will be interested to learn," it says, "that the great auk which recently fetched a large price at an auction is suffering from a severe attack of pneumonia, following on influenza, and is not expected to attend to business for some time."

GIFT TO LEEDS ART GALLERY.—Mr. Charles Geo. Oates, a citizen of Leeds, who recently died bequeathed to the city art gallery the sum of a thousand pounds to be devoted to the purchase of works of art.

LEEDS MUSEUM.—The natural history museum of Leeds is one of the few institutions of that kind which belong to a private society in any of the large cities of England. And it is rather singular that there is another equally important museum in the same county, that of York, also belonging to a private society. It will be admitted that both these museums are exceedingly well managed, yet the benefit of the valuable treasures they contain is not nearly so widely diffused as it would be if they were administered by the city councils. In the annual report on the Leeds museum, which has recently been submitted to the Philosophical and Literary Society, to which the museum belongs, it is stated that the number of persons who visited the museum during 1901 was 23,974, a number that is sometimes exceeded in a single week in a municipal museum in towns with smaller populations than Leeds. These figures, however, are exclusive of school children, and the thorough manner in which these are attended to is highly creditable to the officials of the Leeds museum. On the suggestion of the Leeds and District Association of the National Union of Teachers a scheme has been sanctioned by which nearly half the children in the higher standards of the public elementary schools of Leeds are brought to the museum in weekly batches of about 350, under the charge of teachers and a supervisor. The children, after visiting the museum are required to write essays, and judging from specimens which have been sent to the curator, some well illustrated by sketches, there is gratifying evidence that the purpose of the visit to the museum is being fulfilled. Up to the present 6,197 children and 197 teachers from 127 Board, Church, and Roman Catholic schools of Leeds, and 26 pupil teachers with their master, from the Pudsey Board School have attended.

Applications have been made from schools outside the scheme to attend, and these the Leeds Association of Teachers is arranging to meet. A special lecture has been given to teachers only, and a Saturday evening lecture to parents of the school children.

A WELSH NATIONAL MUSEUM.—The movement inaugurated by the Cardiff corporation for a Government grant towards the establishment and maintenance of a Welsh national museum is meeting with considerable success. Some time ago the council issued circulars to all the public authorities of Wales asking for their co-operation, and the Town Clerk has reported that the memorial had been wholly adopted by six county councils, twenty-two borough councils, fifty-four urban district councils, and one college council. Three county councils, two borough councils, one district council, and two college councils had adopted the memorial in part, and four county councils, two borough councils, and three district councils had taken no action.

THE WALSHINGHAM COLLECTION.—In order to clear up misconceptions which have arisen with regard to the Walsingham collection, Lord Walsingham has written to state that by a deed dated November 23rd, 1901, between the trustees of the British Museum and himself, all his collections of micro-lepidoptera have now become the property of the trustees, upon the condition that his lordship is to retain them in his care and custody so long as he may desire. This will in no way interfere with the study or improvement of the collections during Lord Walsingham's lifetime. As has already been stated, there are upwards of 200,000 specimens comprised in the collection, and they represent a section of the lepidoptera in which the British Museum is most deficient.

A BELATED EGG.—At the Natural History Museum, Barras Bridge, Newcastle-upon-Tyne, the condor, which lives in a large aviary at the back of the museum premises, laid her first egg on Thursday morning. This condor was brought from the Andes of Chili sixteen years ago, and has inhabited the same aviary continuously ever since, growing during the period from a mere nestling into an unusually fine example of her kind. The egg is chalky white, and intermediate in size between those of a goose and a swan. It may be seen, for the present, in the bird-room at the museum.

DUNDEE'S HISTORICAL COLLECTION.—Mr. Edward Cox, of Cardean, has paid all the expense connected with organising and housing the Dundee historical collection, which he handed over to the city. Over two hundred book boxes had to be provided for locating the 10,000 papers, manuscripts, &c.,

illustrating the history of the city during the past century, and large book-cases had to be constructed for the 3,000 Dundee books and periodicals, with specially adapted presses for the maps and plans.

EDINBURGH MUSEUM OF SCIENCE AND ART.—The report for the year 1901 by Mr. F. Grant Ogilvie, M.A., B.Sc., on the Edinburgh Museum of Science and Art, has been issued as a Blue-book. It shows that the total number of visitors has increased from 322,582 in 1900 to 375,179 in 1901. The average attendance on Sunday during the last nine months of the year has been 1,297. So large a number of visitors in the course of three hours, and the unmistakable interest they take in the specimens indicate that the privilege of this opportunity of examining the collections is much valued by a large section of the public. It may be noted that only those members of the staff who volunteered for the duty required on Sunday afternoons are called upon to undertake it. The increase in the staff which was rendered necessary by the recent growth of the collections, and by the variety of the interests to which they appeal, has been carried out in such a way that while the more general and popular usefulness of the museum will be fully maintained, special sections may be still further developed, particularly as accessories to the study and teaching of science and art and technology in Scotland. The care of the existing collections relating to machinery, mining, manufactures, and agriculture, and the formation of a collection which should offer special advantages to teachers and students of the science and technical classes under the Scottish Education Department, will be the work of the technological department, a new division of the museum, to which there has been assigned a staff consisting of a keeper and one assistant.

THE GUILDHALL MUSEUM.—An excellent illustrated guide of the London City antiquities in the Guildhall museum has just been issued by the library committee of the corporation, and attention is thus called to the fact of the museum's existence. The place is not much visited, and even the most determined show hunters among our provincial visitors rarely find themselves in the crypt beneath the Guildhall where the collection is housed. It is none the less a collection well worth visiting by all interested in the history of the capital of the Empire, containing as it does examples of the art and industry of Londoners from the time of the Romans down to the commencement of last century. The museum was established in 1826, since which time London has been almost rebuilt, and in the course of reconstruction many interesting relics of bygone ages have been revealed. These are all treasured at the Guildhall, where the intelligent visitor may by

their aid form a fairly accurate conception of what London and Londoners were like in the times of the Normans, Plantagenets, Tudors and Stuarts.

BRITISH POTTERY.—Visitors to the Bethnal-green museum have now an opportunity of seeing to advantage a considerable portion of one of the most interesting of the national collections of handicraft work. For a long time the historical series of pottery in the geological museum, Jermyn street, was only known to students and a few amateurs. A rearrangement of that institution has taken place, with the result that the collection of pottery has for the present been placed on view in the museum at Bethnal-green. The objects on view are almost entirely British, though some Delft, Roman, and modern Egyptian are shown. There is a representative show of Wedgwood, Leeds, Bow, and Worcester, and a splendid case of Mediæval pottery found in this country. There is no doubt about the technical interest and historical value of the series.

DISCOVERY OF ANCIENT BRITISH URNS.—An interesting and important discovery of twenty urns, contained calcined human bones, has just been made at Sunningdale, near Camberley, on the Ridge Mount estates, during the construction of golf links. It is believed that the mound was the site of an ancient crematorium—probably a battleground—in pre-Roman days. Some of the urns are 1ft. 4in. in diameter. They are of ancient British make, and may, it is said, safely be ascribed to the times before Britain came under the Roman influence. Some of the urns have been sent to the British Museum, the Reading Museum, to Oxford, and to the Louvre, Paris.

ABROAD.

CANADIAN EXPLORATION.—The Musée d'Histoire Naturelle of Paris has sent Mr. T. Obalski to collect in Canada, and to study the natural history and industries of that country.

AMERICAN MUSEUM JOURNAL.—Our contemporary on the other side of the Atlantic has reached No. 4 of its second volume. This was issued in April, and contains several useful papers as well as various notes of general interest. There is a plate shewing part of an exhibit designed to illustrate terms used in descriptive ornithology, this particular part dealing with "types of bill" and "types of feet." Such an exhibit must be of great service in giving a right understanding of the subject to those interested in its study. With this number of the *Journal* is issued a "leaflet"—three times

the size of the *Journal*—on "The Ancient Basket Makers of South-Eastern Utah," by George H. Pepper, which contains numerous illustrations of this primitive form of manufacture.

AMERICAN MUSEUM.—One of the most valuable and interesting finds made by the American Museum Texas expedition of 1901 was that of a nearly complete carapace, the tail-pieces, and part of the internal skeleton of a Glyptodon. The specimen was found by Mr. Gidley, in the side of a bluff of "Bad Lands," at Mount Blanco, Texas. The only portions visible were a few small pieces of the scutes or scales that had been washed away and lay uncovered at the bottom of the little ravine, below where the main part of the skeleton still lay in its original bed or matrix, but so completely hidden by the loose material and bunches of grass that covered the hill-side that it was only by diligent search that it was discovered. The carapace of this specimen is about four feet long, and the tail-piece is about two and a-half feet in length, hence the total length of the animal in life, from the point of the nose to the tip of the tail, must have been between seven and seven and a-half feet. This unique specimen is of particular scientific interest, since it is the first one of this extinct family, sufficiently well preserved to show any of its characters, found so far north.

The paragraph beginning at the bottom of page 307, and continued on page 308, referring to an extinct dog, relates to the American Museum. The heading was inadvertently omitted.

U.S. NATIONAL MUSEUM.—Those who read the remarks on this museum in our last number will be interested to learn that the following amendments to the Sundry Civil Appropriation Bill have been proposed in the U.S. Senate:—An appropriation of \$5,000 for the preparation of preliminary plans for an additional fireproof building for the museum, to cost not more than \$2,500,000; and the appropriation of \$180,000 for continuing the preservation, exhibition, and increase of the collections made by the surveying and exploring expeditions of the Government, to \$200,000. It is sincerely to be hoped that these moderate proposals may be carried.

HARVARD COLLEGE MUSEUM.—The report of the Museum of Comparative Zoology at Harvard College, U.S.A., for the year 1900-1, is a record of continuous and steady work. The connection of the museum with the practical teaching of science enables the authorities to send out zealous and well-equipped collectors, and the patriotism of its *alumni* is shown not only in its endowment of over £100,000, but in the large

series of gifts, amongst which are a collection of Japanese siliceous sponges, the Bangs collection of mammals, and the collections from the Hawaiian and Liu Kiu Islands. The *Bulletin*, which is the official organ of the museum, includes several monographs by the staff and students; and, as an example worthy to be adopted, the faculty are sending the curator to study the coral formation of the Maldive Islands, which belong to Britain. There is a most lucid account of the work done in the various departments, and of the lines along which research is proceeding.

NATURAL HISTORY SOCIETY OF NEW BRUNSWICK.—The excellent work done by this society needs no commendation from us. Those who wish to see what may be accomplished by local naturalists under competent leaders have only to turn to No. XX. of the society's *Bulletin*, which contains valuable papers by Dr. G. F. Matthew, Professor W. F. Ganong, and Dr. G. U. Hay, as well as reports from the sections. The society possesses a museum, recently enriched by aboriginal remains collected and presented by Mr. S. W. Kain; by 2,500 insects collected during 1900 by members and determined by specialists, and by various donations. The museum was first opened to the public on three afternoons of each week three years ago, and this movement has proved a great success, for which the council thanks the assistant-curator, Miss McBeath, who has just retired. The ornithological committee thinks of preparing a catalogue of the birds in the museum.

SOUTH AFRICAN MUSEUM.—The trustees of this museum continue to publish their valuable and really well-produced *Annals*, to previous parts of which we referred in our first number. We have recently received the following parts of Vol. II.: W. F. Purcell, "On some South African Arachnida belonging to the orders Scorpiones, Pedipalpi, and Solifugae;" G. A. Boulenger, "Description of a new Silurid fish of the genus *Gephyroglanis*, from South Africa;" and W. E. Collinge, "On a further collection of South African Slugs, with a checklist of known species." All these were issued on December 18th, 1901, and may be obtained from Messrs. West, Newman and Co., 54, Hatton Garden, London.

THE NEW NATURAL HISTORY MUSEUM AT FRANKFORT-AM-MAIN.—Mr. Ludwig Weber, the architect, contributes an interesting and elaborately illustrated description of the proposed new museum to the "*Bericht der Senckenbergischen Naturforschenden Gesellschaft*" for 1901. A sum of 300,000 marks towards the building was contributed by public subscription, and the site was presented by the Senckenberg Trust. It is situated at the junction of Bleich-strasse and

Stift-strasse, and is trapezoidal in shape, the front and back measuring about 35 and 80 yards respectively, and the two sides about 75 yards each. The buildings surround an open court-yard, which can eventually be used for the exhibition of unusually large specimens. The difference of level between the two boundary streets renders necessary the provision of a basement, which has been devoted to the geological, palæontological, and mineralogical collections. On the ground floor two rooms, about 40 yards long by 10 wide, are devoted to the systematic series of vertebrata; two others, about 20 yards long, to entomology and comparative anatomy; and one room, about 15 by 10 yards, to the local fauna. Provision is made for exhibiting biological groups in a series of cases, illuminated from above in the manner usually adopted in aquaria. The invertebrata and the botanical and scientific collections occupy the first floor, and in immediate proximity to the latter are the workrooms of the staff. The basement contains rooms for maceration and articulation of skeletons, photography, pictrological work, and printing. In addition, there are two lecture rooms, capable of holding 150 and 90 persons respectively, and, last but not least, a banqueting-room for 350 guests!

SOUTH AFRICAN MUSEUM.—The report of the South African Museum (Cape of Good Hope) for the year 1900 contains, as might have been expected, several echoes of the war, not only in the diminished attendance, but also in the melancholy notice of the deaths of two of the correspondents, in Mr. W. Francis and Dr. A. C. Stark. 69,169 people visited the museum during the year, as compared with 81,480 in the previous year. The deficit on the year's working was £170.18s.8d., and the authorities have instituted a rigid system of economy, which we do not think will conduce to the efficient working of the museum. As in most museums, additional case room is required. The reports of the various departments show a considerable number of additions to the collections during the year, with a very interesting account, by an eye-witness, of the fall of a meteorite on the 9th Dec., 1880.

PRINCE AND SCIENTIST.—A very important addition to the short list of stations for the investigation of marine biology will shortly be made at Monaco. The vast and splendidly equipped marine laboratory which the Prince of Monaco has built is now nearly completed, and will very soon be ready for occupation. The situation is superb—on the Monaco rock, hanging over the sea. The Prince intends to welcome naturalists of all nationalities who go there for study, and with this object in view the establishment is provided with a large number of private rooms. There is also to be a great museum

of marine zoology and a library, the nucleus being the Prince's own collections and books. A fine steam yacht will be attached to the station, perfectly equipped with the most modern apparatus for collecting; indeed, this new scientific establishment will be the finest and largest of the kind in existence, and will, no doubt become as popular a centre for marine researches as the famous station at Naples has long been.

ORNITHORHYNCHUS NOT OVIPAROUS.—Mr. G. Metcalfe, M.A., in a communication to the Zoological Society read on December 17th, 1901, and published in Vol. 2, pt. 2, throws doubt on the widely accepted theory that the duck-bill platypus (*Ornithorhynchus*) lays eggs from which the young are hatched. He says that after living many years in a region inhabited by these animals, making special enquiries of the Sydney, Melbourne, Brisbane and Hobart museums, and publishing questions on the subject in Australian newspapers, he had been unable to obtain any evidence that eggs of *Ornithorhynchus* had ever been obtained except by dissection of the mother. He therefore did not believe that the eggs were laid at all, but that they were hatched before extrusion.

WHERE WAS THE WATCHMAN?—In order to test the efficiency of the system of night-watchmen in the Louvre museum, a reporter hid himself in a sarcophagus, just to show how easily a more dangerous visitor might conceal himself for a nefarious purpose. The ruse was so far successful that the reporter remained undiscovered for several hours, and might have spent the whole night in the Louvre unknown to the watchman had not a friend, who had been made acquainted with the secret, allowed his garrulity to give it away. The experience of this enterprising reporter has rather startled some of the authorities, and it has been suggested to the art director of the Louvre that he should raise a corps of watch-dogs to supplement the diligence of the watchmen. The director has not accepted this suggestion, but the night service of men has been doubled. A good plan to act upon would be always to place museum specimens within the locked doors of glazed cases.

ANCIENT PERSIAN ART.—At the Grand Palais are exhibited the trophies which M. de Morgan has brought to Paris after some five years of continuous labour in the excavations of Susa. The collection of ancient Persian art is full of archæological interest, and some of the inscriptions, many centuries before our era, are veritable treasures. For instance, there is one column on which are inscribed the laws of Persia some thousand of years before Christ. Among the

other exhibits are ancient utensils, bas-reliefs in stone and bronze, curiosities of glass and jewellery, collars of pearls and precious stones, earrings encrusted with oriental gems, and other relics of an artistic and luxury-loving past.

WESTERN AUSTRALIAN MUSEUM.—Mr. Alexander W. Milligan, who came from Victoria in 1897 to settle in this State, had already attained distinction as an ornithologist. He is a keen observer and an ardent student of natural history, devoting all the time he can spare from his professional duties to his favourite studies. During the past 12 months he has described three Western Australian birds new to science, viz., *Mirafra woodwardi*, a bush lark from the North-West; *Amytis gigantura*, a grass wren from Cue, both shot by Mr. John T. Tunney, the museum collector; and lastly, a bird of very great interest, shot after four days' chase, by Mr. Milligan himself in the South-West, for *Sphenura littoralis* (as he has named it) lives in the scrub on the coast, and runs over cover instead of taking to the wing. Since Mr. Milligan's arrival in Perth, Australia, he has presented no less than 125 birds and 12 mammals to the museum, in addition to other help he has given; and so, to mark their appreciation, the committee, at the suggestion of the director, have offered to Mr. Milligan the position of honorary consulting ornithologist, which he has accepted.

BRUGES ART EXHIBITION.—Arrangements are being made for the holding of an exhibition of early Flemish art at Bruges, possibly in June of this year. This should be a great success, especially as there is more than a probability that the Belgian Government will not only give considerable support to the movement, but that many of the chief treasures of the museums in other Belgian towns will be temporarily brought together, in order to make the collection historically as complete as possible. Large numbers of fine examples of Flemish art are to be found in this country, and an effort will be made to induce collectors to lend liberally for the same purpose. The leading authority on the subject in this country is, of course, Mr. W. H. J. Weale, and we hear that he will be associated with the scheme.

EXCHANGE AND SALE COLUMN.

Advertisements for museum specimens, books, fittings, or appliances can be inserted in this column. Sixpence for the first ten words, and threepence for every ten words afterwards.

FRANK SUTER & Co., Ltd.,

. . . Electrical Engineers, . . .

Designers and Manufacturers of Electric
Light Fittings.

SPECIALITY :

Picture and Museum Case Lighting . . .

. . . By Suter's Registered Reflectors.

FRANK SUTER & CO., Ltd.,

66, BERNERS STREET,

. . . LONDON, W.

Marine Biological Association of the United Kingdom.

Specimens of MARINE ANIMALS and PLANTS specially preserved for
Museum purposes. For detailed Lists and Prices apply to

THE DIRECTOR, BIOLOGICAL LABORATORY, PLYMOUTH.

SONS, Ltd., ESTAB.
1846.
LONDON, E.C.

Museums or Private Collections.
Sundries to the British Museum, &c.
of any description made to order.

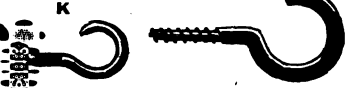
(Patented). 3/6 per gross.
It has a sharp needle point.
It is in any position in trays or
stands, &c. Altogether one of
the most introduced and very cheap.



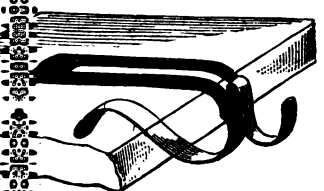
No. 3.—12/- per gross.
For exhibiting specimens from edges of glass
or wood shelves.

Small Hooks for Cases, &c.
Guaranteed truly tapped, bronzed
brass (non-corrosive).

Medium Large K



per gross. 10/- gross.



STEEL SHELF HOOK.
Specimens from $\frac{1}{4}$ or $\frac{3}{8}$ inch shelf.
9/- per Gross.
1 inch shelves at same price.



1008. Price. 8/- per gross.
For descriptive labels. Having two spikes
entirely rigid when once pressed into
sample will be sent Free on application.



Aldersgate Stand (Patented)
For holding descriptive cards at any angle.
12 in. by 18 in. .. 10/- per gross.
12 in. by 24 in. .. 24/-

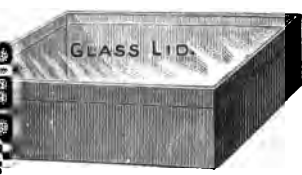
Ltd., ESTAB. 1846.
LONDON, E.C.

Supplies to the British Museum,
 Museum, Horniman Museum,
 and others.
 Catalogues, Illustrations, and Samples, on



No. BT3.

a "Simplex" Shelf Clip.
 Holding specimens from $\frac{1}{2}$ or $\frac{3}{4}$ in.
 Specially useful for long narrow
 labels.
 6 per doz ; 15/- per Gross.



Glass-Topped Specimen Boxes.

White paper inside and black out-
 side as used at the Geological Museum,

Depth.	
by $\frac{1}{4}$ in. ..	18/- per gross.
by $\frac{1}{2}$ in. ..	21/- "
by $\frac{3}{4}$ in. ..	24/- "
by 1 in. ..	27/- "
by $1\frac{1}{4}$ in. ..	31/- "
by 1 $\frac{1}{2}$ in. ..	36/- "
sorted equally ..	27/- "

Prices are quoted Any other size,
 to order.
 Made in the following sizes covered

in. ..	24/- per doz.
in. ..	30/- "
in. ..	36/- "
in. ..	42/- "
in. ..	48/- "
in. ..	60/- "
in. ..	72/- "



Nest Cardboard Tray for Specimens.

width, and finish as boxes No. 14,
 but are $\frac{1}{2}$ in. high.

2	3	4	5	6
6	7/6	9/-	10/6	per gross

Larger sizes to order

Cardboard for Mounting or Writing

	Per doz.
by 19, 6-sheet cardboard, 2/3	
by 19, 8-sheet cardboard, 2/6	
by 19, 12-sheet cardboard, 3/-	
by 19, stout tinted board, 3/6	
Ivory card, 24 by 19, thick, 4/6	
Ivory card, 24 by 19, medium, 4/-	
Ivory card, 24 by 19, thin, 3/6	

above sizes at half the prices.

SONS, Ltd., ESTAB.
1846.
T., LONDON, E.C.
Exhibition or Private Collections.

. & BRACKETS,
ASES.

Bracket J.

Standard Bars
Quality and Finish.

sizes are stocked :—

ASS, BRONZED

10	12 inch.
2/3	2/9 each.
21	24 inch.
6/6	5/6 each.

LE IRON (Warranted).

10	12 inch.
4/3	1/6 each.
18	24 inch.
5/6	4/6 5/6 each.

CASES.

are earnestly solicited to
well for many purposes,
compulsory. We quote
FULL VALUE. Packing
condition, carriage paid,

L TAPPED BAR; Brass, Bronzed, 1/- per foot.

with not less than 4 feet.
Drop Doors
DID VALUE, 9in. high
Moveable Trays.

35/- per foot.
30/-
25/-
22/6



**3514.—Useful Cabinet for private
Collectors or Duplicate Specimens.**
Light wood covered cloth, brass handles.
15 by 12 by 8 (4 drawers) **16/6**
18 by 15 by 20 (5 drawers), **21/-**
20 by 18 by 12 (6 drawers) **25/-**
34 by 20 by 16 (8 drawers), **30/-**

S., Ltd., *ESTD. 1846.*
LONDON, E.C.
For Public or Private Collections.

DIMENSIONS.

Total height, 6ft. 3in. (excluding ornamental iron cresting and finials).

Table Height, 2ft. 9in.
depth, 4ft. 6in.

Total height of Show Case (excluding cresting), 3fr. 6in.

Height of upper part of
Show Case, 2ft. 1½in.

Depth of upper part of
Show Cases, 14 in.

The lower part of Show Case measures at its highest 15 in. and at its lowest 9 in.

Bottom of Case is covered with Claret or Blue coloured Cloth. The under part of table is fitted with Drawers, three in height and length, according to dimensions of Case. All Sashes are made on the "air-tight" principle and Glazed Plate Glass.

7ft. by 4ft. 6in by 6ft. 3in.,
18 Drawers, **£66 10/-**

9ft. by 4ft. 6in. by 6ft.. 24
Drawers, **£78 10/-**

12ft. by 4ft. 6in. by 6ft.,
30 Drawers, **£95**

If delivered outside London, an extra charge is made for packing, according to size, varying from £3 upwards.



Mahogany Plate-Glass Case.

glasses all round and top, carved pediment fitted with one full-sized plate-trapped bars and brackets. Splendid of room.

h, Depth, A Quality, without ped-
ins. air-tight. ment or inside
fittings.

24	£15	5	0	£9	17	6
24	18	10	0	12	15	0
30	21	15	0	15	10	0
30	25	0	0	18	10	0

and for above, 37/6, 57/6 & 72/6 extra.
Cases made for all purposes—any.
Estimates and drawings supplied
on application.

BOTANICAL SPECIMENS

FOR MUSEUMS.

CONES OF RARE CONIFERS.
INFLORESCENCES OF CYCADS,
CYCAS, ZAMIA, MACROZAMIA,
CERATIZAMIA, STANGERIA, ENCEPHALARTOS, &c.,
MALE AND FEMALE.

SECTIONS OF BRITISH AND OTHER TIMBERS.
SPECIMENS FROM THE TROPICS.
SPECIMENS IN ALCOHOL and other media.

Models of British Fungi.

ECOLOGICAL SPECIMENS.

ANATOMICAL SPECIMENS.

HERBARIUM SPECIMENS.

Insectivorous and Parasitic Plants.
SETS ILLUSTRATING ECONOMIC PRODUCTS.
PATHOLOGICAL SPECIMENS.
FOR PARTICULARS SEND FOR SPECIAL PRICE LIST.

J. BACKHOUSE & SON, LIMITED,
THE NURSERIES (Scientific Department,)

Telegrams: "BACKHOUSE, YORK
'Scientific.'"

YORK.

W. D. WEBSTER,

Home Court, 24, Palace Road, Streatham Hill,

. . LONDON. . .

COLLECTOR OF ETHNOGRAPHICAL SPECIMENS,

EUROPEAN AND EASTERN ARMS AND ARMOUR,

PREHISTORIC AND OTHER ANTIQUITIES.

Telegraphic Address: "ETHNICALLY, LONDON."

ILLUSTRATED CATALOGUE published every three months. Each copy contains 20 plates reproduced from photographs, and is subscribed to by all the principal Museums in the world. Subscription 10/- per year, post free, payable in advance.

A few bound Catalogues can still be obtained at the following prices:—

Vol. 1 contains Catalogues Nos. 1 to 10	- -	30/-
Vol. 2 ditto Nos. 11 to 17	- -	20/-
Vol. 3 ditto Nos. 18 to 23	- -	25/-
Vol. 4 ditto Nos. 24 to 27	- -	25/-

The Collection consists of over 10,000 specimens from all parts of the world, any of which will be sent on approval on carriage being paid.

SPECIMENS BOUGHT OR EXCHANGED.

Photographs of in their SUMMER and WINTER appearance, with enlarged views of their bark, leaves, flowers and fruit.
Familiar Trees showing details of structure and growth.
Plants & Flowers MAY BE SEEN at the British Museum; Royal Art Library, South Kensington; University College, London; University College, Liverpool; Museum of Science and Art, Edinburgh; &c., &c. Lists on application.

HENRY IRVING, The Rowans, HORLEY, SURREY.

MUSEUMS ASSOCIATION.

President :

SIR WILLIAM TURNER, K.C.B., B.SC., F.R.S., D.C.L., L.L.D.

Treasurer :

Alderman W. H. BRITTAIN, J.P., F.R.G.S. (Sheffield).

Hon. General Secretary :

E. HOWARTH, Museum, Sheffield.

The object of the Association shall be the promotion of better and more systematic working of Museums throughout the Kingdom. In order to promote a better knowledge of Museums, the Association shall meet in a different town each succeeding year.

That each Museum contributing not less than one guinea a year be a Member of the Association, and that individuals interested in scientific work be admitted as Associates on payment of 10s. 6d. annually.

That each Museum be represented by three delegates, each having one vote. Each Associate to have one vote.

That each Museum belonging to the Association and each Associate receive one copy of the publications of the Association.

That a General Meeting of the Association be held annually, for the transaction of business, the reading of papers, and the discussion of matters relating to Museums.

MUSEUMS ASSOCIATION.

Some of the earlier volumes of the Report are nearly out of print, and Museums requiring complete sets should order them at once. Particulars can be obtained from the Secretary, Museum, Sheffield.

Museum and Art Insurance.*

By JOHN MACLAUCHLAN.

[Paper read at the Edinburgh Conference, 1901.]

IF the subject of Insurance does not on the surface possess the artistic or scientific attraction which usually characterises the papers read at our meetings, it by no means lacks interest—practical and pressing—to most of our members. Scientific in the full sense of the term it could easily be made by one qualified to go into the subtle, and to me mysteriously elastic doctrine of averages; but that would better fit a meeting of actuaries than of curators. It has been forced on my attention at the present moment by two circumstances of recent occurrence. These were the circular issued on June 13th by the Board of Education, and the very large amount which has had to be paid for the insurance, of the art and historical sections only, of the Glasgow International Exhibition.

The circular is as follows:—

Circular 474. Mus.

BOARD OF EDUCATION, SOUTH KENSINGTON,
LONDON, S.W.

13th June, 1901.

SIR,

Owing to the recent occurrence of robberies at various museums throughout the country, the Board of Education are under the necessity of requiring managers of provincial museums to take increased precautions for the safety of the collections lent to such institutions from the Victoria and Albert Museum.

In future, collections to be lent by the Board must be insured by, and at the cost of the institution applying for them, not only against fire but also against theft, for the period of their absence from the Victoria and

* Many of the grievances pointed out in this paper, which was written a year ago, have already been removed. The insurance fire rate on art objects has been reduced from 4s. 6d. to 2s. 6d., and the risks of fire and burglary combined are readily taken for 4s.—for burglary alone 5s. had been asked. Then the Board of Education did not insist on their loan collections being insured against theft in transit, and it is believed that the rule regarding night patrol will not be enforced, if none of the objects are unique, and the collection is insured against burglary. The special attention called to the subject at the Edinburgh meeting has thus been amply justified, and has resulted in a very large saving in insurance in which all museums can share.

SONS, Ltd., ESTAB.
1846.
, LONDON, E.C.

Museums or Private Collections.

Sundries to the British Museum, &c.

of any description made to order.

'Patented'. 3/6 per gross.

It has a sharp needle point,
set in any position in trays or
stands, &c. Altogether one of
the best introduced and very cheap.



M 3.—12/- per gross.
Exhibiting specimens from edges of glass
or wood shelves.

Hooks for Cases, &c.

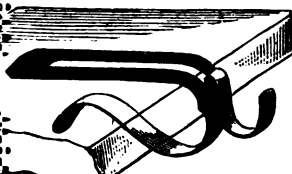
Like, guaranteed truly tapped, bronzed
brass (non-corrosive).

Medium Large K

K

per gross.

10/- gross.



STEEL SHELF HOOK.

Specimens from $\frac{1}{4}$ or $\frac{3}{8}$ inch shelf.
9/- per Gross.

inch shelves at same price.

**THE IMPROVED SENSIBLE
"REVERSED"**

1008. Price. 8/- per gross.
Having descriptive labels. Having two spikes
absolutely rigid when once pressed into
sample will be sent Free on application.

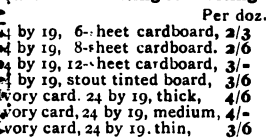
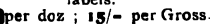


Aldersgate Stand (Patented)

Supporting descriptive cards at any angle.

2 in. by 1 1/2 in. .. 10/- per gross.
3 1/2 in. by 2 1/2 in. .. 24/-

Exercises, Illustrations, and Samples, on



	AMOUNT OF COVER.			ACTUALLY INSURED.									
	£.	s.	d.	£.	s.	d.	s.	d.	%	£.	s.	d.	
Sculpture	20,000	0	0	19,485	15	4	at 17	6	%	170	10	0	
Bronzes	7,300	0	0	7,198	4	8	at 17	6	%	63	0	0	
Fragile	12,000	0	0	10,109	4	0	at 10	0	%	50	10	0	
A. Young, per separate Insurance..	38,500	0	0	at 5	6	%	105	17	6				
H. Roberts, State Ins. Co.	8,000	0	0	at 5	6	%	22	0	0				
Fine Art and General Ins. Co. ..	31,775	0	0	at 5	6	%	87	6	0				
				£1,179,233	13	5				£3,073	2	0	
Transit Insurance on objects received and returned to owners										£1,878	12	0	

Not that the average rates charged for insurance against fire are exorbitant—indeed, I learn on good authority that fire insurance is the branch of business which pays the companies least: last year few fire companies had any profit, and in many cases the balance was on the wrong side. That is true of insurance against fire as a whole; but my point is, that in the peculiar circumstances of museums and art galleries, the risk is very small, if not altogether nil, because many of these are fireproof, and all are carefully watched, with proper appliances within reach. Yet, whilst buildings and furniture, which are so frequently burned, are charged 1s. 6d. and 2s. per cent., art objects seem to average 4s. 6d. This high rate is probably explained by the sporadic character and comparatively small total of art insurances, which prevent that competition which is the great reducer of price in all things.

The schedule of rates, which the willing courtesy of the curator members has enabled me to draw up, shews that the rates for buildings, fittings, and natural history specimens are about the normal, and also that some curators have been able to obtain very favourable terms for art insurances, which says much for their business aptitude. I need not detain you reading this schedule, the contents of which cannot easily be grasped by merely hearing it read. I hope every member will get a copy of it: and I regret that being confined to institutions connected with this association—some of which have not made returns—its range is so limited. But it is not the ordinary insurance of buildings, fittings, and natural history specimens I desire to discuss specially, but the rates charged

for works of art, whether stationary or in transit, against fire, theft, or destruction. The rates for these are frequently three to four times higher than the usual ones; yet experience proves that the risk run from all these causes is very small indeed, and logically demands a smaller rate than the normal, instead of the much higher one charged.

In such a case as that of the Glasgow International Exhibition, where the buildings are of the most modern type, especially designed for their purpose, absolutely fireproof, and patrolled day and night by picked constables and experienced firemen, in charge of the most up-to-date appliances, there is no risk whatever. And yet a committee, including many of the ablest business men in the world, were *compelled* by custom to spend the enormous sum I have mentioned. I do not forget that some of this insurance also covers risk in transit, which supposed danger my experience convinces me is a mere bogey. For over a generation I have been sending and receiving pictures by rail, sometimes several thousands in a year, and never having had one destroyed or injured, never, of course, received any compensation. Many of these were uninsured, and the immunity from accident was so complete, that I came to regard the risk for which so much is frequently paid as perfectly imaginary; and so, when sending my own property, or that of friends whom I advise, I never insure, and, after special enquiry of all the curator members of this Association, I find the general experience is the same as mine. Practically no one has suffered any loss, or made any claim, except of the most trifling character, on insurance or railway companies. St. Helens once recovered 40s., and another time 5s. Sheffield once or twice from insurance company for breakage of glass, but failed to recover from railways. "*Exceptio probat regulam,*" and a strong confirmation of my theory. And really the danger, for which we have been charged so highly, is almost mythical. It does not confute my belief to remind me that the pitcher may go many times to the well before it is broken; for when the unexpected does happen, I maintain that the railway company, which charges the highest of all its rates for the conveyance of works of art, ought to pay for those of them which it destroys.

Theoretically it is so; practically it has been found impossible to get full, or any compensation, and the law requires to be made clearer and stronger on this point. As we have seen, even our able and most energetic secretary was entirely beaten in an effort to recover anything from the railway; and if Mr. Howarth failed, who can hope to succeed?

In the case of Glasgow, I jocularly announced myself, to Mr. Paton, as a new Columbus, who had made the great discovery of an effective plan to save all these thousands; and it had at least the simplicity of his plan, for it was merely to trust, as Columbus did, all to Providence. But my friend Mr. Paton, sympathising with me in secret, said this was an unbelieving and wicked world. Let me here congratulate him on the triumph he has scored in gathering together, in the magnificent art galleries of Glasgow, one of the greatest Art Exhibitions ever seen in this country.

I have learned from Mr. Mullen, of Salford, that what I propose was actually done on the occasion of the last Manchester International Art Exhibition, where the committee, finding difficulties as to insurance, guaranteed the safe return of the loans, and suffered no loss. So that after all I am *not* the Columbus of art insurance; but then is not the comparison all the better? for are we not told that the Northmen had landed in America centuries before the immortal Genoese did? We are all aware that many of the large steamship companies and other great commercial businesses never insure their property. Neither, Dr. Bather, Mr. Vallance, Mr. Martin, and others inform me, does the Government of our Empire. This at once suggests, why should great, or even small, municipalities do so? Relatively to the property at stake, the resources are the same. And then, are we not forced to ask, why should the Imperial Government, which does not insure its ironclads on the stormy seas, or its art and other property in London, Dublin, and Edinburgh, insist upon this same art property being insured against burglary as well as fire when it is sent to the country? The citizens of the capitals are already specially privileged in having vast museum and art collections located in their midst, without having like dwellers in country towns to pay rates for their support. These magnificent col-

lections are supported from the taxes, which capital city, and provincial town, and rural district alike pay. But in fairness we must admit that art property lent to country museums is out of the custody of its proper guardians, and is not, as a rule, so effectively safeguarded as in London. But I will make a definite suggestion regarding this after I have referred to another foolish custom, which greatly increases the cost of insurance.

As a general rule, property, such as buildings, ships, and commercial, is only insured for its real value, although doubtless there are exceptions to this as to all rules. The insurance of objects of art somehow follows a different rule, so much so that it is not extravagant to say that, taken as a whole, works of art are insured for double any value that could be realised by their sale. It would be exceedingly invidious to give precise examples of this, but some present may recall an instance of very recent occurrence, where a very large collection did not realise in an open sale, attended by all the collectors, experts and dealers, above one fourth the sum it was valued at. But it is pleasant to be able to add that art insurances, even when greatly overvalued, are almost invariably done in absolutely good faith, and in pure innocence of heart.

An insurance agent will not insure a small cottage for £5,000, although the owner protests ever so much that it is worth that sum, but, in most cases, companies accept without question paintings, especially Old Masters, at the value declared by the owner. Nor can they be severely blamed for doing so, for, as a rule, their agents do not affect to be art connoisseurs, and they are fairly entitled to assume that the owner knows the real value, and will not be so foolish as to go on for years paying heavy premiums on, say an alleged thousand pounds picture, which in reality is not worth fifty. I do not assert that the fact that this funny game is all profit, and no loss to them, affects their judgment. For when the evil day does come, they will call in an expert, and only pay on the real, and not the ascribed value. The premium is really altogether beside the question, because the insurer ought to

know the exact value of his property, and, if from vanity, or carelessness, or even honest simplicity, he insures too highly, why he must pay for his negligence, however genuine his faith and honest his intentions. Perhaps insurance companies are not altogether blameless, but it would be opposed to sound public policy, and to commercial integrity, if it was possible to get from them more than the selling market value of any object destroyed. Then the value must be real and genuinely intrinsic, and not irrelevantly ascribed or derived from associations, however sentimental.

Some collectors will tell you—"I bought that painting for ten pounds, but as it is a portrait of my dear mother-in-law's grandmother, I would rather lose a thousand pounds than it," and when he lends it to an exhibition asks for it to be insured for this £1,000. I fear that a cold-blooded insurance company, incapable of feeling this universal love for mothers-in-law, will only pay the market value of ten pounds, although the museum committee to which it was lent have been paying the premium for £1,000. I have insisted upon the point, because this mistake, I will not call it evil, as it is usually caused by thoughtlessness and not intention, is a heavy tax upon all public authorities who borrow pictures, and because it is useless, the high unreal values being quite irrecoverable. Also because this same borrowing of works of art from our old historic castles and our great modern collections has great possibilities, sure to be realised in a not distant future. In borrowing for the Glasgow International Exhibition in our district we did not get a refusal from one great noble or merchant prince, and although it can be easily understood that loans are more readily granted to such exhibitions than to merely local galleries, their time also I feel to be coming. There is a quickly-growing disposition to welcome the toilers to share in the refined pleasure and educative influence of art collections, and as, in most cases, the owners are absent for half the year, it can be done without inconvenience to them, and would be the truest socialism. But the cost of insurance would be a hindrance in small museums, and it will be a very great boon indeed if we can get that put upon a proper footing. A great step in this direction was made in the establishment of the Fine Art As-

surance Company, which, Mr. Mullen informs me, arose out of the difficulty on this point at the last Manchester International Exhibition. It is founded upon the right principle, for an expert examines works of art before insurance, and, after a value is mutually agreed upon, the company binds itself to pay that amount in the event of loss. But the premiums charged are, I most respectfully submit, quite double what they might be, and I hope will soon become. I should very much like to see a profit and loss account of the business of insurance companies, discriminating between their art, and ordinary fire insurance.

But after this too long exordium, necessary, however, to consider the subject all round, what are the remedies to be proposed? A friend in whose judgment I have great confidence, and who has enjoyed an experience lengthened and unique in regard to the matter, has sent me some suggestions. The first of these is, that an endeavour should be made to establish a Museum, Fine Art, and Library Mutual Assurance Company. With this I most cordially agree, but, after careful consideration, I do not think that it would be wise for this Association to undertake so formidable a task. To be successful it would be necessary to have a much broader basis to rest upon, and a much wider field to work in, than we could provide. This seems proved by the limited scope of the schedule I have prepared—to which every museum curator affiliated to our Association was invited to contribute his experience. It takes a long time indeed for a small Mutual Insurance Society to establish itself, a not very serious catastrophe in its earlier years would render it bankrupt. I beg leave, then, very humbly, to suggest a scheme, which I will formulate under the following heads :—

(1.) Let the municipalities, great and small, enter into a mutual alliance for the insurance of all civic property—buildings, and general purposes, as well as museums, galleries, and libraries. They can borrow on almost as good terms as Government, and thus, with capital at command, if disasters did come in the early years, the money necessary would be available, and would be gradually repaid. After I

had written this my friend Mr. James, of Maidstone, sent me the following cutting from *The Councillor and Guardian* of June 22nd, 1901 :—

MUNICIPAL INSURANCE.

The same committee's [The House of Commons Select Committee on Fire Brigades] report on the question of municipal insurance is much more to our liking. The case for the council undertaking their own risks, or those of all the local authorities in London, is unanswerable. At a very liberal estimate the fire loss on municipal property does not exceed 15 per cent. of the premiums paid, as compared with the 60 per cent. which is the average for all classes of property insured by the companies in London and elsewhere. Hence municipal property, if taken on its merits, ought to be taken at an immensely reduced price by the companies, and it is not a matter of surprise that the council should be prepared to assume the entire risk themselves with a light heart. There is ample precedent for the policy. The Government do not insure their buildings, whilst the London School Board and the great railways get along very well without the assistance of the insurance companies. The Metropolitan Asylums Board, a body which cannot be accused of being venturesome, is only waiting for the permission of the Local Government Board to discontinue the insurance of their property altogether. Lastly, the local authorities and boards of guardians of the Metropolis are, or were a very short time ago, strongly in favour of combining for the purpose of municipal insurance. The idea of the county council is that they should seek Parliamentary sanction for a scheme which would admit of the co-operation of all the other local bodies in their area, but it would certainly be politic, before coming to any definite decision, to ascertain what form that co-operation should take. Neither the borough councils nor the boards of guardians like to be considered as subordinates.

It is very consolatory to find that the thoughts of others are tending in the same direction as one's own, and the only correction, or rather addition, I desire to make, is to say that if the loss by fire of municipal property does not exceed fifteen per cent. of the income of the fire companies, the loss on museums and art galleries does not amount to one per cent. And this naturally brings me to my second point.

(2.) The premiums to be charged by such a Mutual Municipal Assurance Society will not require to be, even during the earlier years, over half those now paid, and if, as there is no reason to doubt will be the case, museums continue to enjoy this happy immunity from fire and accident, ultimately the rates may become merely nominal. They should also be made discriminating—that is, municipal pro-

perty liable to accident must pay a higher rate than property, such as art, free from such misfortune. The companies do so discriminate, but, in our case, it works out queerly, for our property the least liable to accident seems to pay two or three times the rate charged for property far more dangerous.

(3.) A systematic effort ought to be made to get all classes of works of art valued at real, and not fancy prices. True, some are unique, and so priceless, but these are comparatively rare exceptions. Speaking generally, works of art are often insured for more than their realisation value, and it is supreme folly to go on paying heavy premiums for prices which can never be recovered. This applies chiefly to lent works.

(4.) The powerful municipalities of the nation ought to make a strenuous effort to have the law of railway responsibility for damage done to property made clearer and more effective. For art objects they charge a specially high rate, but somehow always manage to evade responsibility for damage done in transit. They plead mysterious "Carriers' Acts," insufficient packing, want of insurance, *with them*, let it be noted, and this has always struck me as the coolest of all impositions. They charge you a very high rate for the conveyance of your art objects, and then they want you to pay them a further sum to prevent them injuring the things you pay them to carry. An ordinary museum, or a private person, cannot fight them, for they always take you to law, having a wealthy organisation behind them, and, even if you win, your extra judicial expenses probably amount to more than your claim. It is a system of immoral persecution which these great companies wage against the humble citizen. They should be grappled with.

(5.) Regarding the new circular from the Board of Education, if this entails a new hardship it is quite unintentionally, and we must admit that it is their imperative duty to thoroughly safeguard their most valuable, often priceless, objects of art. It does seem a little hard that the citizen who has the misfortune not to live in London, Dublin, or Edinburgh, should pay for loss which is not charged against the dwellers in these fortunate capitals. Robberies may occur in London

museums, although guarded by the *élite* of the London police, but when they do take place it is not the Common Council of the City, or the County Council of Greater London, which is held responsible, or compelled to pay heavy rates for insurance. Such rates might not press heavily on these great and wealthy corporations, but they are rather hard on the smaller country museums, whose chronic condition is starvation. Anything likely to cause the withdrawal of these invaluable South Kensington loans will be really a national misfortune. I often regret that the public scarcely realises the enormous amount of good work which the Board of Education is doing throughout the country by this system of loan collections. Its value has been greatly increased by the wise and courteous way in which the system has been administered; the very fact that it leads to visits, annually or oftener, from accomplished and most obliging experts, is a very great advantage in itself. This system enables the dweller in the far-off country town to share to some extent in the privileges of the Londoner, and the fact that the collections are changed annually makes the interest perennial, and prevents them ever becoming stale. As experience has proved that even the closest watching by the most efficient constabulary in the world will not altogether prevent theft, why ask us poor country brethren to accomplish the impossible? To patrol efficiently a small country museum by day and night in the way suggested by the Council of the Board of Education will cost at least £150 per annum, an outlay prohibitory in many cases. Should the Board of Education not content themselves with seeing that the precautions taken are sufficient, and punish any careless museum by the withdrawal of the collection, rather than inflict a heavy tax all round? It is fortunate that the Board of Education have not asked us to insure against breakage in transit. Insurance companies have a holy dread of porcelain—Lloyd's actually wanted 25s. per cent. to insure that risk, and Glasgow actually paid that excessive premium for statuary.

(6.) Museums ought to have the courage of their convictions, and frankly tell lenders that there is a class of objects frequently lent which are altogether outside the realm of

insurance. If your city has got a charter, or your ancestor a patent of nobility from William the Conqueror or Malcolm Canmore, lend these most interesting documents by all means, and see that they are properly safeguarded, but don't vulgarise them by commercial appraisalment. Although you get the unfortunate museum, or exhibition, to insure them for any number of thousands, what sum, however great, can restore them to you if lost, and to insure such essentially uninsurable objects savours of gambling.

I hope that these rambling remarks will help to draw attention to this most important subject, and so save some of the scanty funds enjoyed by British museums.

JOHN MACLAUCHLAN.

Hygiene as a Subject for Museum Illustration.

[CONTINUED FROM PAGE 258.]

V.

Division H. Prevention.

SECTION 1.—ACCIDENT.

In this section appliances and regulations for preventing accidents in factories, such as guards for machinery, eye-guards, respirators, &c.; safety lamps for mining operations; testing apparatus for flash-point of oil, and specimens of safety lamps, should be exhibited.

Devices for reversing sashed and casement windows for cleaning purposes.

Safety treads for stairs and steps, and non-slippery doors for inspection chambers and coal-holes.

Special provisions, by means of coloured bottles and distinctive labels, against the accidental drinking of poisons.

Means of preventing loss of life at sea. Models of life-belts, life-boats, and lighthouses, rocket apparatus, with illustrations of notable instances of life-saving; copies of medals and certificates awarded for heroic deeds.

Diagrams of poisonous berries, mushrooms, and fruits.

Diagram specifying what to do in cases of poisoning, burns, scalds, dog-bite, snake-bite, &c.

Dog-muzzles and troughs for water.

Horse-shoes, to prevent slipping, and special means of detaching fallen horses from harness and vehicle.

Signals, locking-gear, blocking systems, couplings, brakes, and other ingenious methods of preventing accidents on railways. The local railway companies will generally assist by lending models, and these are always interesting exhibits.

Tabulated statistics should be exhibited in this section showing the various trades in which accidents occur, and a prominent place should be given for displaying the names and circumstances of any local events where life-saving had occurred.

SECTION 2.—FIRE.

The local fire brigade should be invited to illustrate this section by models of engines, escapes, hose, connections, grenades, fire buckets; and a good supply of preventive appliances should be kept in accessible positions ready for use.

Specimens of non-flammable materials for dresses, curtains, decorations, and building construction.

Specimens of hand appliances for fire extinction.

Descriptive label, showing how fabrics may be rendered non-flammable.

SECTION 3.—DISEASE.

The medical officer of health of the district should be applied to, to supervise this and the next section, and should be asked to provide specimens of various prophylactics and regulation forms, for the prevention of disease.

A map of the district, showing the officers in charge, to whom complaints can be made, or from whom information could be obtained.

Notification, isolation, and quarantine regulations should be prominently displayed, and the duties of individuals and householders in regard to disease made clear.

SECTION 4.—DISINFECTION.

It is very important that care should be taken to warn the public against placing reliance on valueless so-called disinfectants, and this is best done by statements of what can or cannot be done by various chemicals under certain specified conditions.

The various methods of disinfection should be explained.

Specimens of disinfectants, deodorants, and fumigants, with the necessary apparatus for using them, should be shown.

A model or diagram of a steam disinfecting apparatus, with particulars of its value and use as an effective method.

Specimens of fabrics, furs, books, and leather goods, after treatment by the steam disinfectant, should be exhibited, to show that some things are entirely spoiled by it, and should be otherwise treated.

Division I. Protection.**SECTION 1.—FIRST AID.**

If the St. John Ambulance Association were applied to, in all probability they would gladly arrange this section, and exhibit their methods of aiding the sick or unfortunate in cases of sudden attack of disease or accident.

Bandages, splints, tourniquets, special and improvised ambulances, and methods of conveyance for sick and wounded.

SECTION 2.—HOSPITALS.

The local hospital authorities will often fit up good illustrations of hospital treatment, such as hospital beds, with wax models of patients under various treatments; say a chronic case, an accident case, a case of infectious disease; and if so, they should be permitted to place a box for contributions to the hospital funds.

SECTION 3.—SANATORIA.

As this is now a growing and hygienic section, institutions, especially local ones, should be invited to send photographs of internal and external arrangements; and, in this section, health resorts at home and abroad can be introduced. The various railway and shipping companies should be invited to supply illustrations of picturesque scenery.

The new methods of treating tuberculosis should be exhibited, and thus show the great importance and extreme value of fresh air.

Division K. Demography.

This branch of the subject will be found distributed over all the divisions, and in nearly all sections, and will consist of life tables,

tables of mortality in different localities and countries and occupations, and every phase of the incidence of disease. There is no doubt about the value of statistics, and these, if properly prepared, can be made both interesting and useful.

The graphic methods of linear comparative or columnar illustrations are most suitable for public work, and should be adopted.

Division L. Meteorology.

The local museum should furnish a complete station of observation and record, and failing suitable accommodation in an open space, the roof of the building devoted to hygiene should be so constructed as to provide for this. In the accompanying diagrammatic plan, access to the flat roof is suggested, and should be used to show the rainfall, barometric pressure, hours of sunshine, hygrometric conditions, temperatures, air currents, wind pressure, and other phenomena in connection with climate and weather. Records of the various instruments should be faithfully made and exhibited for public examination.

Division M. Library.

This branch should contain all the literature on the subject, and should be available to the public, on special conditions, as a reference library and reading room, and could conveniently be housed on the first floor, as shown in sketch plan.

Division N. Sciences.

SECTION 1.—CHEMISTRY.

Besides various illustrations in other sections (such as chemical disinfection, chemistry of foods, water, air, and soils), the apparatus for chemical analyses, and some popular methods of illustrating the principles of acids, alkalies, chemical combination, elements, and antidotes would serve good purposes, if arranged in a popular way.

SECTION 2.—BACTERIOLOGY.

Diagrams of known organisms and classified groupings should be shown, also methods of cultivation, isolation, and identification illustrated. This section could be made most interesting by the addition of microscopic work, under proper supervision.

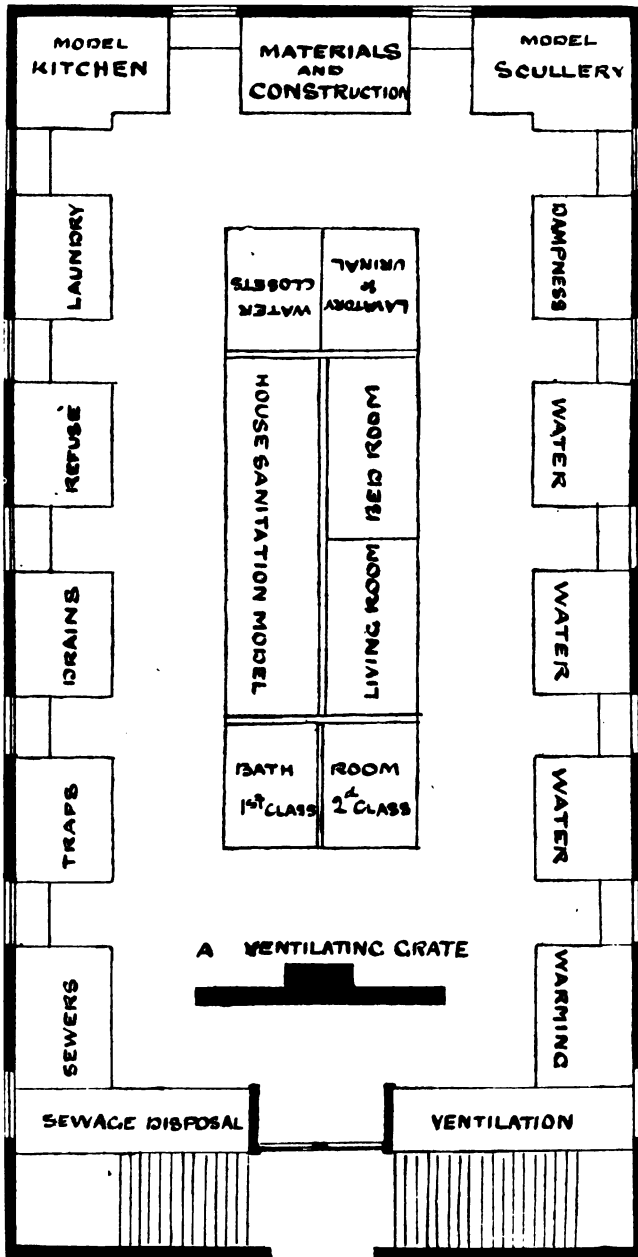
SECTION 3.—PHYSICS.

A very large field opens up under this section, but it is intended that the exhibits should be confined to those features which are related to the atmosphere, water, soil, and physiography, and these of an elementary character.

SECTION 4.—GEOLOGY.

Models of geological strata have already been suggested for other sections, and, in all probability, every museum will have access to full information on this subject; but a complete set of ordnance survey and geological sections should be kept for reference, as they are of the greatest value to inquirers as to suitable building sites, water supply, &c.

GROUND PLAN



SECTION 5.—MICROSCOPY.

A section should be devoted to the microscope, and opportunity should be given for the examination of specimens of foods, clothing, water, and air impurities, organisms, pathogenic and parasitical.

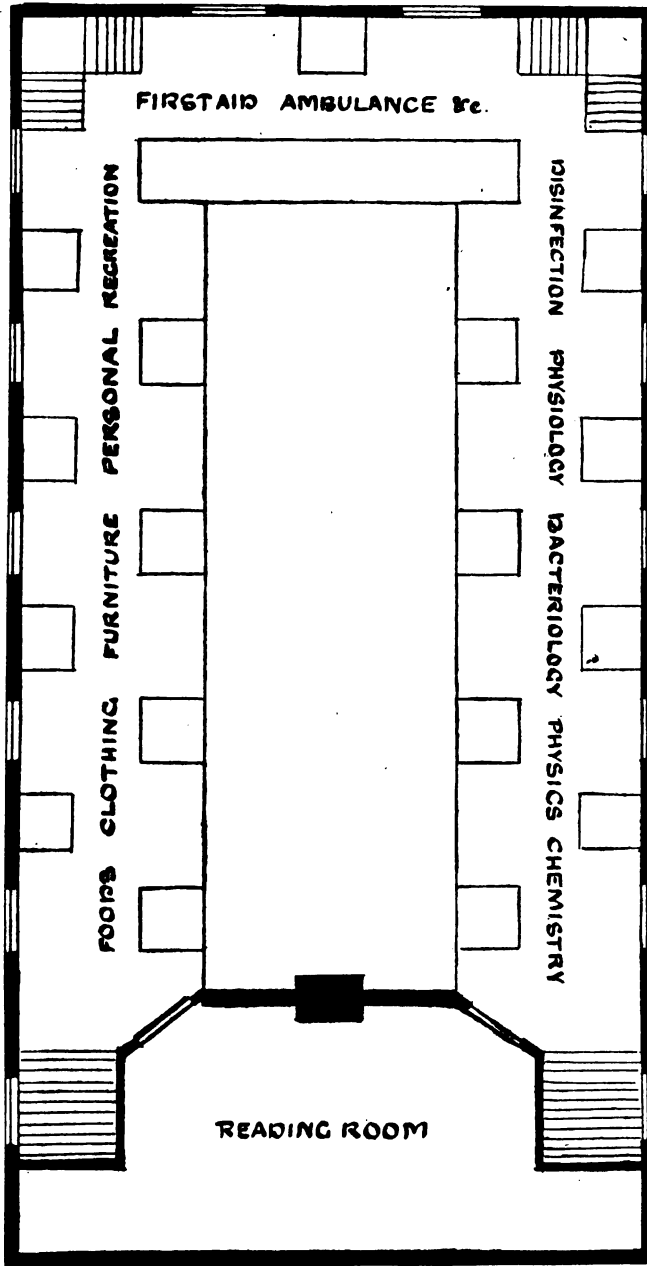
SECTION 6.—ANTHROPOLOGY.

A very large section was devoted to this branch of hygiene at the Paris Exhibition, and the liveliest interest was excited by the illustrations of peculiarities of hands, feet, eyes, ears, mouths, heads, and limbs, both as regards inherent tendencies and methods of identification, and showing the important relation between mind and body, the harmony of which is the aim and object of hygiene.

D. P. H.

P.S.—The accompanying sketch plans of ground and first floors of a section 100 × 50 feet are intended as suggestions only. They will, it is ventured to hope, be quite obvious to the practical reader, and need only a few words of explanation. In addition to windows, extending to the ceilings, the centre of roof over the opening of gallery, and over reading room, should be constructed for top lighting and cross ventilation. A ventilating grate, properly connected with the outer air, should be fixed as shown; all windows made to open for at least half their areas; additional heating apparatus in the shape of hot water or hot air system, or both, should be provided. The stairs in corners of gallery plan are for access to the roof, a portion of which should be concreted, to form a promenade, where specimens of plants and trees connected with foods, drugs, or building construction, could be shown, either growing or in states of preservation: and at some convenient part of the roof an observatory should be fitted for meteorological section. The spaces marked off for the various sections are in some instances raised platforms, in others counters, and in some glass cases, to suit the particular class of exhibits.

[This series of articles is now completed, and they will be published in pamphlet form to assist those who wish to carry out the suggestions made. Copies can be obtained from the Hygienic Referendum, 2, Gisburn Road, Hornsey, London, N.]



— GALLERY PLAN —

General Notes.

AT HOME.

BRIGHTON MUSEUM.—Mr. J. Minto, M.A., chief librarian at Perth, has been appointed chief librarian and director of the art galleries and museum at Brighton.

THE ANTILLEAN ERUPTIONS.—The director of the British Museum (Natural History) has arranged a temporary exhibition to illustrate the recent volcanic eruptions in the West Indies and their associated phenomena. The materials have, for the most part, been supplied by the various departments of the museum. A series of maps and diagrams, some specially prepared shews the geography of the Lesser Antilles and the relations of their volcanoes to the general structure of the globe, particularly to the disturbed region of Central America. The recent elevation of the Antillean ridge from great depths is illustrated by geological specimens of much interest. Pictures and photographs give an idea of the scenery, buildings, vegetation, and human inhabitants of the ruined islands. The poverty of the fauna and flora, due perhaps to previous disasters, is likewise illustrated by specimens and drawings. Various products of the present and previous eruptions are exhibited and explained. In another case is a typical series of volcanic products, carefully labelled for the benefit of the public. A display of plates, pictures, and photographs illustrates the phenomena of eruption in other volcanoes, as well as the existence of extinct, or possibly dormant, volcanoes in various parts of the world. The officers of the Natural History branch of the British Museum are to be congratulated on following an example set by their colleagues at Bloomsbury in the "Chaucer," "Coronation," and other popular exhibitions.

DUBLIN LECTURES.—Count Plunkett, F.S.A., has been selecting illustrations from the principal London collections, and the Birmingham Museum, for a series of lectures, to be delivered in the Dublin Municipal Libraries, by the Arts and Crafts Society of Ireland, of which the Earl of Mayo is president.

HULL MUSEUM.—Two publications have reached us from the Hull Museum, both of considerable interest. One includes a paper read by the curator, Mr. Sheppard, to the Hull Geological Society which contains some excellent remarks on the arrangement of museums, and on the relations which should subsist between museums and local scientific societies in their

districts. In the same publication there is an admirable little sketch of the Sculcoates pottery. From this we learn that for a short period Hull actively exported pottery into Holland and Germany. The second publication is an account of Hull tobacco-pipes and pipe-makers of the seventeenth and eighteenth centuries, and it contains matters of general as well as of local interest. It is amusing in these days, when gigantic efforts are being made to limit competition, to read, "John Chapman, Henry Norman, and the rest of the pipe-makers, being burgesses within this corporation, this day complained to this bench that one Nicholas Tarboton served his apprenticeship to a pipe-maker at Selby, and hath taken a house with an intention to follow his calling here, and the said Nicholas Tarboton requested this bench to-day to make him a burgesse of this corporation. Upon hearing of the said Nicholas Tarboton, this bench refused to make him a burgesse, and ordered him to remove himself and family from hence, being informed that there were more burgesses already in that trade than find employment." It is pleasant to learn that this "trust" was not ultimately successful. *Prosit omen!*

CORK EXHIBITION.—The Cork Exhibition promises to prove an unqualified success. It has been ably assisted by the Department of Agriculture and Technical Instruction. One of the most picturesque exhibits is the selection made (at the request of the department) by Count Plunkett, F.S.A., from the Victoria and Albert Museum, South Kensington. This loan includes silver maces, cups, &c., a small marble statue of "Eve," by MacDowell, and many other fine examples of Irish work.

NORWICH MUSEUM.—Mr. Frank Leney, the assistant curator of this museum, has just published in the *Geological Magazine* (n.s., dec. IV., vol. IX., pp. 166-171, and 220-231; April and May, 1902) "A List of the 'type,' figured, and described Fossils" which it possesses. The collection is rich in important specimens of Mammalia from the Forest Bed, while it also comprises several cirripedes described by Charles Darwin, and many molluscs figured by Searles V. Wood. The chief collections are those made by J. J. Colman, M.P., Rev. J. Gunn, Miss Anna Gurney, and Mr. Randall Johnson, of Forest Bed mammalian remains; the Robert Fitch collection from the Forest Bed and the Norwich Chalk; the Crowfoot and Dowson collection of fossils from the Norwich Crag at Aldeby; the large series of molluscs from the Norwich Crag at Bramerton, made by the present curator of the museum, Mr. James Reeve; and the collection formed by Samuel Woodward, author of the "Geology of Norfolk" (1833).

This last, however, appears to be incomplete. Mr. Leney is to be congratulated on his list, which seems to have been compiled with much care. Other museums, please copy!

THE VICTORIA AND ALBERT MUSEUM.—The following cutting from the *Times*, referring to the report of the speech of Sir John Gorst in introducing the education estimates, is decidedly encouraging, as showing a growing appreciation of the work done by the circulation department of the Victoria and Albert Museum:—

"Now he wanted to say one word about the Victoria and Albert Museum. The Victoria and Albert Museum was very much more appreciated in Europe than in England. They had given us that greatest form of flattery—imitation. There had been set up in Berlin an institution on the model of the Victoria and Albert Museum. In France, Switzerland, and other countries there were also museums of the same kind; and in 1889 M. Machon, Minister of Public Instruction, reported that the South Kensington Museum was a most powerful agent for the propagation of art and industrial instruction in England. The principal development of the Victoria and Albert Museum during recent years was in the circulation department, by which copies of the most beautiful scientific works and historical collections had been made accessible to the people of the provinces. He found that in 1895 there were 52 provincial museums receiving 19,929 articles, and in 1901 there were 88 museums receiving 26,149 objects. But in the schools of art in provincial centres in 1895 there were 241 schools of art receiving 6,057 objects, and in 1901 there were 289 provincial schools of art receiving 14,880 objects, and the directors of provincial museums and the masters of provincial schools of art were constantly visiting the Victoria and Albert Museum, where they were in the habit of conferring with the circulation department, and where they were treated with every courtesy. Very great activity was now displayed in making copies of all the great works of art for educational purposes, collected from the continent of Europe. Copies were made in electrotypes, plaster, photography, and coloured drawings, lantern slides, and books, and any suggestions made by local museums and local schools of art received the most careful attention. They had also had during the present administration the museum open on a Sunday, and about 100,000 people a year came to the museum on that day, showing, he was happy to say, the people were spending their leisure in this laudable way every Sunday afternoon. Now he must say a word about geological survey. The work had been vigorously carried on. In Ireland it had been finished, but in England and Wales the solid had been finished and the superficial was being carried on. In Scotland the southern half had been surveyed, and in the Highlands great progress had been made. The recommendations of the committee of 1890 had been carried out in every respect.

ABROAD.

The American Museum of Natural History, New York, has been presented by Dr. Edgar A. Mearns with a large series of shells, illustrating the shore molluscs of the neighbourhood of Newport, Rhode Island.

A MUSEUM OF WARFARE.—A correspondent of the *Daily Chronicle* states that the international museum of peace and

war at Lucerne, for the building of which Mr Bloch, the Russian philanthropist, left a large sum of money, is nearly completed, and will be opened to the public this season. The museum will contain a complete and unique collection of arms used in war from the earliest period up to the present day, designs relative to the wars of ancient times, and plans and reliefs of well-known battlefields, a special feature of this department being the thirty years' war, Napoleon's wars, the German-French war, and the Transvaal war. Four enormous paintings, twenty-four yards by seven yards, are at present in preparation at Munich to adorn the walls of the museum. The subjects are "Manœuvres in the Gothard," "Horrors of War," "Attack on a Redoubt" (Plevna), and "An Engagement between the English and Boer Infantry." The object of the originator is to bring forcibly and clearly before the eyes of the public the horrors of modern warfare, and by this means to further the cause of universal peace.

THE EXHIBITION OF A FOSSIL VERTEBRATE.—Curators who have to deal with large fossil vertebrata, especially saurians, in a somewhat imperfect state, should refer to a paper by Prof. C. E. Beecher, of Yale, on "The reconstruction of a Cretaceous Dinosaur, *Claosaurus annectens*, Marsh" (Trans. Connecticut Acad. Sci., XI., pp. 311-324, pls. xli.-xlv., Jan., 1902). The skeleton has been mounted as though the animal were running on its hind legs, the tail being raised to balance the weight of the fore-part of the body, while the outstretched fore-limbs balance the sway of the shoulders. The positions of the preserved bones have been determined as far possible by their actual positions in the matrix as found, while any restored portions, as well as the pose of the whole, have been based on a consideration of other dinosaurs, and of recent animals in motion. Any criticism of the details of this particular skeleton is a matter for specialists in vertebrate osteology, but all curators may be interested in Prof. Beecher's account of the method of mounting, which, therefore we quote in full:—"The skeleton of *Claosaurus* is mounted on a slab consisting in part of the natural stone and in part of a rock surface manufactured from ground and disintegrated Laramie sandstone. The slab measures twenty-six feet ten inches, in length, by fourteen feet two inches, in height; and has a base two feet two inches wide, extending out from the lower edge, and upon which the feet rest. This method of mounting fossil skeletons has been employed with great success in the American Museum of Natural History, New York, and is especially well adapted for skeletons that are somewhat compressed or are more or less imperfect on one side. The present specimen is very much larger than anything heretofore

attempted, and the result shows that slab mounts can be practically employed with success for animals of considerable size. For convenience in handling and to provide for the future possibility of moving this specimen, it was mounted in four sections, which may be detached by simply breaking the thin artificial rock crust and removing the bolts holding them together. Each section rests upon a truck supported on strong casters. This construction is of course entirely concealed by the casing and framing of the finished mount. The sections were made of timbers measuring three by four inches in section, with vertical and horizontal cross pieces at regular intervals. The horizontal base was attached by means of heavy double angle-irons. On these frames the pieces of rock carrying the bones, together with the separate bones, were securely fastened and the intervening spaces covered with wire netting of one-half inch mesh. Over this netting was spread a thin layer of plaster of Paris, and lastly a still thinner layer of ground Laramie sandstone mixed with plaster of Paris and gum Senegal. Before the artificial rock covering was thoroughly hardened the surface was tool-dressed, thus giving it the same appearance as the surface of the real rock where it was chiseled away to expose the bones. The left fore and hind limbs are entirely free from the slab and are supported by irons in the usual way. They are mounted so that they can be readily detached and taken apart for purposes of study. The original rock connections of all the bones have been preserved and there can be no controversy over their primary order and sequence."

THE NEW METROPOLITAN MUSEUM AT NEW YORK.—The new entrance and wing to the Metropolitan Museum of Art have recently been completed at a cost of \$1,000,000. More than two years have been taken to build it. The outer doors open into a grand hall, 103 feet long and 54 feet wide, at the end of which are two smaller halls or galleries. Around the larger hall is a gallery, and opposite the entrance a staircase, 24 feet wide, of classical design, leads to the upper gallery and the old building. These new galleries are for sculpture. This portion, just completed, is a part of a grand, main entrance to the entire scheme of buildings, as they will ultimately stand when completed. Mr. Hunt (the younger) is the architect.

ARMY MUSEUM, PARIS.—The Musée de l'Armée, Paris, has been enriched with an extremely valuable album containing sixty water-colour drawings of the National Guard of the First Empire and an admirable history of the fine corps, illustrated with four hundred and fifty sketches in the text. The pictures are the work of Chelminsk, Dupray, Grammont, Orange, Raffet, and Vallett, names that guarantee accuracy in

the uniforms and artistic treatment. The donor of the gift is Edouard Detaille, the famous military painter. The same museum has also received a novel present in the shape of a unique collection of buttons, selected from the many varieties of uniforms which have been used from the days of the First Republic till now. The collection numbers eight hundred, many of which are extremely rare, and was bought from the owner for the nation by a generous donor, who calls himself "Sabretache."

INDIAN ART-WORK.—An interesting exhibition will be held at Delhi next January, in connection with the Coronation durbar. It will consist of typical specimens of the best Indian art-ware. It is being organised under the auspices of the Indian Government, and is designed to stay the ruin which at present seems to threaten Indian art industries generally. By means of the exhibition the Government hopes to obtain a thorough knowledge of the present condition of Indian art industries—to judge of the effect of foreign competition, and generally trace the cause of the decay into which such industries have fallen. It is not, however, intended to admit any articles of inferior workmanship into the exhibition. Rather it will be endeavoured to stimulate capable native artificers by affording them an opportunity of comparing their work with the best work produced by their fellows. Coupled with this exhibition of articles of special manufacture is to be a loan collection. To this it is hoped that not only museums but native chiefs, noblemen, and indeed all individuals in possession of suitable specimens of native art, will contribute liberally. Further, with the object of illustrating the way in which the articles exhibited are made, a number of picked handicraftsmen will be accommodated inside the exhibition enclosure, and will there ply their several trades.

BAYONNE MUSEUM.—This summer visitors to Bayonne will find a new and a valuable attraction in the shape of a museum which Bonnat, the famous portrait painter, has just bequeathed to his native town. All his life M. Bonnat has been an ardent collector of works of art, drawings, pictures, bronzes, bas-reliefs, and antique glass having had equal fascination for him. His purchases have not been confined to the art of any one period, catholicity has marked his taste, which has always been directed with wise judgment. Consequently his collection has wonderful variety and rare excellence. Old and modern masters have appealed to him, and in the Musée Bonnat will be found examples of artists whose styles are as far apart as the periods in which they lived. Among the old masters represented are Michael Angelo, Filippo Lippi, Pietro della Francesca, Rembrandt, Goya, Ribeira,

Vandyck; and the more modern painters who hold their own with their elder confrères are David d'Angers, Ingres, Reynolds, Hoppner, Meissonier, Gaillard, Prud'hon, Flandrin, Decamps, Daubigny, and Diaz, and there are also some fine water-colours and bronzes by the sculptor Barye. Altogether the museum is a notable addition to the many splendid art institutions in France.

WESTERN AUSTRALIA.—The Kimberley exploration party sent out by the Government in the early part of last year to explore that vast tract of territory lying between King's Sound and Cambridge Gulf, has just returned, and we look forward with interest to the publication of the reports of the Government geologist (A. Gibb Maitland, Esq., C.E., F.G.S.), and the naturalist (Dr. F. M. House). The collections made by the latter consist of two mammals, forty-three birds, a number of dried plants, and forty-nine ethnological specimens, in addition to a number of photographs of scenery, and of aboriginal drawings and carvings on rocks. The smallness of the collections is due to the leader having been a surveyor, whose aspirations were limited to the discovery of agriculture and pastoral areas, and who did not allow the scientific officers the facility for those researches, for which they were attached to the party. The zoological and ethnological specimens have been deposited in the Western Australia Museum.

CAMBRIDGE, MASS.—Dr. Alexander Agassiz, who has recently returned from an expedition to the Moldives, has been appointed director of the Museum of Comparative Zoology of Harvard University, a post which he had relinquished for a time.

VIENNA MUSEUM.—*Science* states that, under the direction of Dr. M. Steindachner, an expedition will be sent out in the autumn to northern Brazil, to collect for the Vienna Museum of Natural History.

YALE UNIVERSITY.—We read in *Science* that the fossil localities in Dakota, Wyoming, and the Bad Lands are being explored by Dr. J. L. Wortman, of the Peabody Museum of Yale University, who will be in the west until September. Here the late Professor Marsh made his important palæontological discoveries.

EXCHANGE AND SALE COLUMN:

Advertisements for museum specimens, books, fittings, or appliances can be inserted in this column. Sixpence for the first ten words, and threepence for every ten words afterwards.

FRANK SUTER & Co., Ltd.,

. . Electrical Engineers, . .

Designers and Manufacturers of Electric
Light Fittings.

SPECIALITY :

Picture and Museum Case Lighting . .

. . By Suter's Registered Reflectors.

FRANK SUTER & CO., Ltd.,

66, BERNERS STREET,

. . LONDON, W.

Marine Biological Association of the United Kingdom

Specimens of MARINE ANIMALS and PLANTS specially preserved for
Museum purposes. For detailed Lists and Prices apply to

THE DIRECTOR, BIOLOGICAL LABORATORY, PLYMOUTH.

NS, Ltd., ESTAB.
1846.
LONDON, E.C.

Museums or Private Collections.
Sundries to the British Museum, &c.
of any description made to order.
(Patented). 3/6 per gross.

It has a sharp needle point,
set in any position in trays or
stands, &c. Altogether one of
the most introduced and very cheap.

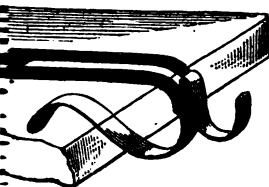


3.-12/- per gross.
biting specimens from edges of glass
or wood shelves.

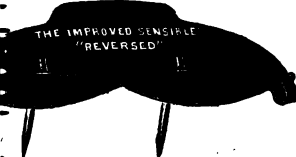
Hooks for Cases, &c.
guaranteed truly tapped, bronzed
(non-corrosive).
Small Medium Large K



per gross. 10/- gross.



STEEL SHELF HOOK.
Specimens from $\frac{1}{4}$ or $\frac{3}{8}$ inch shelf.
9/- per Gross.
each shelves at same price.



Price, 8/- per gross.
descriptive labels. Having two spikes
very rigid when once pressed into
it. Sample will be sent Free on application.



Everscate Stand (Patented)
any descriptive cards at any angle.
in. by $1\frac{1}{2}$ in. .. 10/- per gross.
in. by $2\frac{1}{2}$ in. .. 24/- "

W. & A. G. S., Ltd.,
LONDON, E.C.

ESTAB.
 1846.

Sundries to the British Museum,
 Museum, Horniman Museum,
 and others.

Illustrations, and Samples, on



No. BT3.

The "Simplex" Shelf Clip.

Holding specimens from $\frac{1}{4}$ or $\frac{3}{8}$ in.
 Specially useful for long narrow
 labels.

1/6 per doz.; 15/- per Gross.



No. 14.—Glass-Topped Specimen Boxes.

Lined white paper inside and black out-
 side. As used at the Geological Museum,
 London.

	Width	Depth.	
1	in. by $\frac{1}{8}$ in.	..	18/- per gross.
2	in. by $\frac{1}{4}$ in.	..	21/- "
3	in. by $\frac{3}{8}$ in.	..	24/- "
4	in. by $\frac{1}{2}$ in.	..	27/- "
5	in. by $\frac{3}{4}$ in.	..	31/- "
6	in. by 1 in.	..	36/- "
7	in. by 1 1/4 in.	..	42/- "
8	in. by 1 1/2 in.	..	48/- "
9	in. by 1 3/4 in.	..	54/- "
10	in. by 2 in.	..	60/- "
11	in. by 2 1/4 in.	..	66/- "
12	in. by 2 1/2 in.	..	72/- "

Assorted equally. Any other size,
 on application, will be made to order.

Prices are made in the following sizes covered

1 1/2 in.	..	24/-	per doz.
2 in.	..	30/-	"
2 1/2 in.	..	36/-	"
3 in.	..	42/-	"
3 1/2 in.	..	48/-	"
4 in.	..	54/-	"
4 1/2 in.	..	60/-	"
5 in.	..	66/-	"
5 1/2 in.	..	72/-	"



No. 15.—Neat Cardboard Tray for
 Specimens.

Length, width, and finish as boxes No. 14,
 but are $\frac{1}{2}$ in. high.

2	3	4	5	6
5/-	6/-	7/6	9/-	10/6 per gross

Larger sizes to order.

Cardboard for Mounting or Writing.

	Per doz
24 by 19, 6-sheet cardboard,	2/3
24 by 19, 8-sheet cardboard,	2/6
24 by 19, 12-sheet cardboard,	3/-
24 by 19, stout tinted board,	3/6
24 by 19, thick,	4/6
24 by 19, medium,	4/-
24 by 19, thin,	3/6

the above sizes at half the prices.

SONS, Ltd., ESTAB.
1846.
LONDON, E.C.
Exhibition or Private Collections.

BRACKETS,
ES.



Bracket J.
Standard Bars
Quality and Finish.

Sizes are stocked :-

BRONZED

10	12 inch.
2/3	2/9 each.
21	21 inch.
6/6	3/6 each.

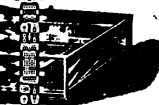
IRON (Warranted).

10	12 inch.
1/6	1/9 each.
21	24 inch.
4/6	5/6 each.

CASES.

earnestly solicited to
well for many purposes,
compulsory. We quote
FULL VALUE. Packing
condition, carriage paid,

L TAPPED BAR; Brass, Bronzed, 1/- per foot



not less than 4 feet.

Top Doors	35/- per foot.
Full Value, gin. high	30/-
Removable Trays	25/-
	22/6



**Useful cabinet for private
collectors or Duplicate Specimens.**
at wood covered cloth, brass handles.
15 by 12 by 8 (4 drawers) 16/6
18 by 15 by 20 (5 drawers) 21/-
20 by 18 by 12 (6 drawers) 25/-
34 by 20 by 16 (8 drawers) 30/-

Ltd., *BSTD.*
1846.

LONDON, E.C.
for Private Collections.

DIMENSIONS.

Total height, 6ft. 3in. (excluding ornamental iron cresting and finials).

Table Height, 2ft. 9in. depth, 4ft. 6in.

Total height of Show Case (excluding cresting), 3ft. 6in.

Height of upper part of Show Case, 2ft. 14in.

Depth of upper part of Show Cases, 14 in.

The lower portion of Show Case measures at its highest 15in. and at its lowest 9in.

Bottom of Case is covered with Claret or Blue coloured Cloth. The under part of table is fitted with Drawers, three in height and length, according to dimensions of Case. All Sashes are made on the "air-tight" principle and Glazed Plate Glass.

7ft. by 4ft. 6in. by 6ft. 3in., 18 Drawers, **£66 10/-**

9ft. by 4ft. 6in. by 6ft. 3in., 24 Drawers, **£78 10/-**

12ft. by 4ft. 6in. by 6ft. 3in., 30 Drawers, **£95**

If delivered outside London, an extra charge is made for packing, according to size, varying from £3 upwards.



Wagony Plate-Glass Case.

all round and top, carved pedimented with one full-sized plate-glass door and brackets. Splendid room.

B Quality,
Depth, A Quality, without pediment, air-tight. ment or inside fittings.

24	£15 5 0	29 17 6
30	18 10 0	12 15 0
36	21 15 0	15 10 0
42	25 0 0	18 10 0

above, 37/6, 57/6 & 72/6 extra.
Cases made for all purposes—any estimates and drawings supplied on application.

BOTANICAL SPECIMENS

FOR MUSEUMS.

CONES OF RARE CONIFERS.
INFLORESCENCES OF CYCADS,
CYCAS, ZAMIA, MACROZAMIA,
CERATZAMIA, STANGERIA, ENCEPHALARTOS, &c.,
MALE AND FEMALE.

SECTIONS OF BRITISH AND OTHER TIMBERS.
SPECIMENS FROM THE TROPICS.
SPECIMENS IN ALCOHOL and other media.

Models of British Fungi.

ECOLOGICAL SPECIMENS.

ANATOMICAL SPECIMENS.

HERBARIUM SPECIMENS.

Insectivorous and Parasitic Plants.
SETS ILLUSTRATING ECONOMIC PRODUCTS.
PATHOLOGICAL SPECIMENS.
FOR PARTICULARS SEND FOR SPECIAL PRICE LIST.

J. BACKHOUSE & SON, LIMITED,
THE NURSERIES (Scientific Department,)

Telegrams: "BACKHOUSE, YORK
'Scientific.'"

YORK.

W. D. WEBSTER,

Home Court, 24, Palace Road, Streatham Hill,
... LONDON. ...

COLLECTOR OF ETHNOGRAPHICAL SPECIMENS,
EUROPEAN AND EASTERN ARMS AND ARMOUR,
PREHISTORIC AND OTHER ANTIQUITIES.

Telegraphic Address: "ETHNICALLY, LONDON."

ILLUSTRATED CATALOGUE published every three months. Each copy contains 20 plates reproduced from photographs, and is subscribed to by all the principal Museums in the world. Subscription 10/- per year, post free, payable in advance.

A few bound Catalogues can still be obtained at the following prices:—

Vol. 1 contains	Catalogues	Nos. 1 to 10	- -	30/-
Vol. 2	ditto	Nos. 11 to 17	- -	20/-
Vol. 3	ditto	Nos. 18 to 23	- -	25/-
Vol. 4	ditto	Nos. 24 to 27	- -	25/-

The Collection consists of over 10,000 specimens from all parts of the world, any of which will be sent on approval on carriage being paid.

SPECIMENS BOUGHT OR EXCHANGED.

EVERY MUSEUM SHOULD HAVE A HEALTH SECTION

BECAUSE IT IS IMPORTANT, PRACTICAL AND INTERESTING
IF DESIGNED ON POPULAR AND PROPER LINES.

Advice and Help on this Subject can be obtained by application to

THE HYGIENIC REFERENDUM,
FERRESTONE ROAD, HORNSEY, N.

Photographs of
Familiar Trees
Plants & Flowers

in their SUMMER and WINTER appearance, with enlarged views of their bark, leaves, flowers and fruit. showing details of structure and growth.

MAY BE SEEN at the British Museum; Royal Art Library, South Kensington; University College, London; University College, Liverpool; Museum of Science and Art, Edinburgh; &c., &c. Lists on application.

HENRY IRVING, The Rowans, HORLEY, SURREY.

MUSEUMS ASSOCIATION.

President :

Sir WILLIAM TURNER, K.C.B., B.SC., F.R.S., D.C.L., L.L.D.

Treasurer :

Alderman W. H. BRITAIN, J.P., F.R.G.S. (Sheffield).

Hon. General Secretary :

E. HOWARTH, Museum, Sheffield.

The object of the Association shall be the promotion of better and more systematic working of Museums throughout the Kingdom. In order to promote a better knowledge of Museums, the Association shall meet in a different town each succeeding year.

That each Museum contributing not less than one guinea a year be a Member of the Association, and that individuals interested in scientific work be admitted as Associates on payment of 10s. 6d. annually.

That each Museum be represented by three delegates, each having one vote. Each Associate to have one vote.

That each Museum belonging to the Association and each Associate receive one copy of the publications of the Association.

That a General Meeting of the Association be held annually, for the transaction of business, the reading of papers, and the discussion of matters relating to Museums.

MUSEUMS ASSOCIATION.

Some of the earlier volumes of the Report are nearly out of print, and Museums requiring complete sets should order them at once. Particulars can be obtained from the Secretary, Museum, Sheffield.

This book should be returned to the Library on or before the last date stamped below.

A fine is incurred by retaining it beyond the specified time.

Please return promptly.

FINE ARTS LIBRARY
3 2044 039 271

AM 1.57.35 (1) 1901-1902

Museums Journal

DATE

ISSUED TO

~~NOT TO LEAVE LIBRARY~~

AM 1.57.35(1)
1901-1902

NOT TO LEAVE LIBRARY